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CITY OF ABERDEEN.

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# REPORT

BY THE

MEDICAL OFFICER OF HEALTH

FOR THE YEAR

1907.





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#### POPULATION.

*(Table I.)*

As estimated by the Registrar-General from the census of 1901 and the previous census of 1891, the population of the city, at the middle of 1907, was 174,579. The population in the preceding year was similarly estimated at 171,022. The increase, according to these estimates, amounts to 3,557. As stated, however, in recent annual reports, there can be no doubt that the rate of growth of the population is far below that calculated by the Registrar-General. Estimating the population from the increase in the Voters' Roll, I believe that it did not exceed 166,300 at the middle of 1907, which gives an increase for the year of only 300, as compared with the 3,557 of the Registrar-General. The city still continues to suffer, as it did for the preceding two years, from great industrial depression, which seems to be felt in every trade. The lack of growth was not so evident in the valuation of the city as in the population, for the valuation increased by £15,109, as against £6,379 in the preceding year, and an average of £23,120 for the previous ten years.

In order to avoid discrepancy with the rates as published by the Registrar-General, the rates for births, marriages, and deaths in the tables accompanying this report are calculated on the population estimated by him. This means that the rates given are probably lower than the actual rates by about 4·9 per cent. Thus the total death-rate for the year, instead of being 14·17, was probably about 14·87, and the birth-rate, instead of being 25·8, was probably about 27·1.

#### BIRTH-RATE.

*(Table II.)*

The total number of births during the year was 4,502, or at the rate of 25·8 per 1,000 of the population, as estimated by the Registrar-General. In the preceding year (1906) the births amounted to 4,712, or at the rate of 27·6 per 1,000 of the population, and in 1905 to 4,892, or at the rate of 29·2. The birth-rate has been falling rapidly during the last five years, even when allowance is made for its being estimated on too high a population. In 1903 the rate was 31·0, and last year it fell to 25·8, or, if corrected, to 27·1—a drop of about 13 per cent. The difference between the death-rate and the birth-rate last year was 11·6, and is the smallest difference recorded for many years. It is not yet so small as to affect materially the natural growth of the population of the city, provided there is no emigration, as there has recently been on account of industrial depression. Aberdeen, as will be seen later in the report, is not

TABLE I.—POPULATION OF ABERDEEN IN 1907  
At Various Age-Periods.  
(As estimated from Census.)

	Under 1 year.	0 5. years.	5—15 years.	15—25 years.	25—60 years.	Above 60 years.	All Ages.
Percentages of Population at each Age (according to Census)	2·67	12·26	22·79	21·00	35·81	8·14	...
Estimated Population at each Age-Period in 1907	4,661	21,403	39,786	36,662	62,517	14,211	174,579

TABLE II.—BIRTH, DEATH, AND MARRIAGE RATES IN ABERDEEN,  
Per 1,000 of population.

Year.	Births.			Deaths.			Marriages.		
	St. Nicholas.	St. Machar.	City.	St. Nicholas.	St. Machar.	City.	St. Nicholas.	St. Machar.	City.
1907	30·4	22·7	25·8	17·2	12·2	14·2	12·9	5·5	8·4
1906	31·8	24·7	27·6	16·7	13·2	14·6	12·3	5·0	7·9
1905	35·0	25·4	29·2	19·0	13·4	15·6	12·6	5·3	8·2
1904	34·2	26·8	29·8	20·6	15·0	17·2	14·0	5·9	9·2
1903	35·9	27·7	31·0	21·1	14·4	17·0	14·2	5·6	9·1
1902	35·4	27·2	30·5	22·1	15·1	17·9	14·1	5·7	9·1
Mean of 1902-1906	34·5	26·4	29·6	19·9	14·2	16·5	13·4	5·5	8·7
1901	37·0	27·0	31·0	21·6	16·0	18·2	13·3	5·9	8·9
1900	37·8	27·9	31·8	23·7	15·9	19·0	14·0	5·6	9·0
1899	38·0	27·7	31·9	22·6	15·5	18·4	13·9	6·7	9·6
1898	39·7	28·8	33·3	24·3	15·5	19·1	15·0	6·1	9·7
1897	38·7	28·8	32·8	22·5	14·7	17·9	14·3	6·2	9·5
Mean of 1897-01	38·2	28·0	32·2	22·9	15·5	18·5	14·1	6·1	9·3
Mean of 1886-95	35·4	29·5	32·2	22·7	17·4	20·0	11·1	5·7	8·1
1876-85	...	...	34·4	...	...	20·4	...	...	7·8
1866-75	...	...	36·2	...	...	23·0	...	...	8·2

exceptional in the lowness of its birth-rate in recent years, and in its rapid fall. It is generally believed that the decrease is due to artificial rather than to natural causes. In the whole of Scotland the birth-rate fell from 29·2, in 1903, to 27·0, in 1907—or a drop of 8 per cent., as compared with the 13 per cent. in Aberdeen.

The per-centage of illegitimate births to the total births in Aberdeen during the year was 9·8. The average for the preceding ten years was 8·3. Aberdeen stands higher than any other of the large towns in respect of the proportion of illegitimate births, but is closely followed by Dundee.

#### MARRIAGE-RATE.

(Table II.)

During the year there were 1,473 marriages within the city, equivalent to a rate of 8·4 per 1,000 of population. In the preceding year there were 1,358 marriages, and in 1905 there were 1,374 marriages. The marriage-rate for last year does not appear to reflect the industrial depression to the extent that might have been expected, but this may be, in part, due to a rebound from the exceptionally low rates of the preceding two years.

#### DEATH-RATE.

(Table II.)

The total number of deaths during the year was 2,474, equal to a death-rate of 14·17 per 1,000 of the population, as estimated by the Registrar-General. In the preceding year the deaths amounted to 2,491, giving a death-rate of 14·57.

These death-rates, it is important to note, have been arrived at after adjusting the list of deaths by the interchange between this and other districts of deaths of persons occurring in districts outside their usual place of residence.

Allowing for the death-rate for the past year being unduly lowered by an over-estimation of the population, the rate is, nevertheless, the lowest on record. During the five years ending 1907 the rates have been, respectively, 17·0, 17·2, 15·6, 14·6, and 14·2. These figures show how rapidly the death-rate has fallen recently, the more when it is borne in mind that the lowest recorded rate up to the commencement of these five years was 17·9, in 1897 and 1902. Compared with the average of thirty to forty years ago, the rate for last year was less than two-thirds of that rate. It is difficult to realise how great the saving of life was last year as compared with the average of these earlier years, but it may be stated thus, that, if the mortality-rate had remained as high as in these years, there would have been nearly 4 additional deaths in every day of the year, or, say, a total of 11 deaths, as compared with the 7 that actually occurred.

#### ANALYSIS OF THE DEATH-RATE.

(a) *Mortality in Relation to Age (Tables III. and IV.).*

##### *Infantile Mortality.*

There is no section of the population which so demands the serious attention of the community as the infants, who, until the last three or four years, have almost everywhere shared so little, if at all, in the general reduction of the death-rate; and yet recent

TABLE III.—MORTALITY FROM ALL CAUSES AT VARIOUS AGE-PERIODS  
(per 1,000 of population at each age).

Year.	AGE PERIOD.						All ages.
	Under 1 year.	0—5 years. (Infant Period.)	5—15 years. (School Period.)	15—25 years. (Adolescent Period.)	25—60 years. (Mature Period.)	60 years and upwards. (Post-mature Period.)	
1907 . .	120·4	38·2	2·5	2·9	9·8	58·9	14·2
1906 . .	131·2	41·4	2·4	3·4	9·9	57·8	14·6
1905 . .	151·6	44·0	2·8	3·7	10·6	61·6	15·6
1904 . .	167·2	54·7	3·0	3·5	11·1	62·9	17·2
1903 . .	157·2	49·7	2·8	4·6	11·8	62·7	17·0
1902 . .	156·5	48·4	2·8	5·2	12·8	69·4	17·9
Mean of 1902-1906 (Five years).	152·7	47·6	2·8	4·1	11·2	62·9	16·5
1901 . .	176·5	52·2	3·4	5·1	12·4	68·3	18·2
1900 . .	177·8	54·4	3·0	4·9	14·0	68·9	19·0
1899 . .	171·3	55·0	2·9	5·6	12·6	64·7	18·4
1898 . .	196·4	62·8	3·8	4·8	12·1	64·1	19·1
1897 . .	173·8	52·5	3·3	5·5	12·0	64·6	17·9
Mean of 1897-01 (Five years).	179·2	55·4	3·3	5·2	12·6	66·1	18·5
1886-95 . . (Ten years).	168·5	53·8	4·6	6·3	12·8	68·1	20·0
1876-85 . .	144·9	52·0	5·7	6·9	13·5	69·9	20·4
1866-75 . .	146·2	59·4	7·4	6·0	18·7	72·3	23·0



experience seems to show that there is no section so likely to give an immediate response to ameliorative measures. The country has tardily awakened to the neglect of the infant, but almost everywhere active and enthusiastic efforts are now being made to extend the chances of its survival. Perhaps in no field of hygienic work have such large results followed from the measures taken, and there is, therefore, the greatest encouragement to extend these measures, and to prosecute them with still greater activity. In some towns a fall of nearly one-third has followed upon a vigorous campaign of three or four years. In Aberdeen itself the fall is considerable since the Town Council took the matter up by the appointment of Health Visitors, as will be seen from the following figures:—

Year.	No. of Births.	No. of Deaths under 1 year.	Deaths per 1,000 Births.
1900-04 (Average of Five Years),	4,853	701	144
1905, . . . . .	4,896	683	138
1906, . . . . .	4,712	599	127
1907, . . . . .	4,502	561	125

Table III., which gives the mortality per 1,000 of population of infants under one year of age, shows an apparently much larger decline, but this is obviously misleading, as it is based, as is usual in such tables, on the proportion of the population at different ages, ascertained at the preceding census; but since that year there has, as already remarked, been an unusual fall in the birth-rate, which naturally diminishes the proportion of infants in the population, and affects the estimated death-rate. It has, however, to be observed that the distinctly smaller decline in infantile mortality, as reckoned from the proportion of deaths to births, is not a fair representation of the whole decrease, inasmuch as with a diminishing number of births in each succeeding year—a diminution which amounted to 210 in 1907—there will fall upon the later year an undue proportion of deaths arising from the larger number of births in the preceding year. With a decreasing number of births, the infantile mortality thus reckoned would exhibit a smaller decline than has really taken place; while, with an increasing number of births, the decline would have been exaggerated. If allowance is made for this error, it may be fairly claimed that the mortality among infants has fallen by nearly one-seventh during the past three years. This is a large drop, and appears to offer proof of the good influence of the work of the two Female Health Visitors.

But there is no reason why the reduction should not go very much farther. In Huddersfield, which has been one of the foremost towns in this work, the infantile mortality fell last year to 97, and the authorities of that town are very hopeful of carrying the reduction farther.

It cannot be too often stated that exceedingly few children are born diseased, and that quite the majority—about two-thirds—of those in a city such as ours who die before reaching the end of the first year of life succumb to preventible causes. If this statement be true, then, of the 561 children who died last year, 300 to 400 might still have been living had they been reared under the most favourable conditions and with the best possible care.

The failure to provide these conditions is very seldom due to lack of affection or anxiety on the part of the mother. The Health Visitors have frequently remarked on the extreme affection of the mothers in this city for the babies. If there are exceptions anywhere, they are almost wholly confined to the mothers of illegitimate children. It has come under the

observation of the Visitors that when a childless couple have been desirous of adopting a baby of legitimate birth no married woman in Aberdeen seems to be too poor, or to have already too large a family, to permit her parting with her child, even to a much more comfortable home than her own. I emphasise the intensity of this very natural maternal feeling, because it furnishes the best guarantee for the ultimate success in this city of such educational and other measures as will enable mothers to nurse their babies with fuller knowledge and intelligence.

There are, of course, other causes at work than simple ignorance and wrong habits. Poverty casts its shadow over the houses of not a few of the working classes—often an honest poverty due to irregular employment or to the ill-health of the bread-winner, but sometimes a poverty caused by dissolute habits. Fortunately, in the poorest houses the baby is nearly always breast-fed, and no direct outlay is required for the purchase of milk; but the mother, if herself badly nourished, cannot produce for her infant the requisite quality and quantity of milk. Every dairy farmer knows the effect of bad or insufficient feeding on the yield and richness of the milk of his herd. Insufficient feeding of the mother may injure the health of the baby before birth, although Nature, with its extraordinary care for the perpetuation of the race, will often nourish the child at the expense of the mother.

The feeding of the mother is a large question, and has scarcely as yet fallen within the province of municipal government. Attention, however, is being given to it in some towns by voluntary philanthropic agencies. A rapidly diminishing birth-rate may so raise the value of the mother and baby in the social economy of the State that the State may come to regard it as an obligation to see that neither mother nor infant suffers from lack of nourishment.

Meanwhile the State and the community have a clear duty in endeavouring to dispel by educational measures the ignorance which so largely prevails regarding the proper management of the infant.

Such education must be begun betimes, and it is, in the opinion of many, an obligation resting upon every educational authority to see that girls, before they reach womanhood, should receive some plain instruction in the duties of motherhood, as regards both the maintenance of the health of the mother and the proper upbringing of the infant. It is satisfactory, therefore, to be able to state that the School Board of this city has for some years provided a class for young women, in which instruction is given by Dr. Anne Mercer Watson in infant management and feeding, as well as in other matters relating to hygiene and nursing. This class is at present attended regularly by over 90 young women, but it is obvious that, although the work done cannot fail to be of the greatest value, the number of women reached is very far short of the number requiring such instruction in this city. If possible, arrangements should be made so that every young woman should have such instruction provided for her. If it could be made compulsory, it would be all the better.

The Maternity Institution, apart from its philanthropic side in affording an asylum for a few poor women in a distressing time, and in providing them—and many others attended in their own homes—with the best nursing and medical skill, is also exercising an important educational effect in the town generally, and especially among the poorer classes who most need it. There can be no doubt that this institution is doing most valuable educational work, and deserves support and encouragement on that ground alone. During the past year 135

children were born in the institution, and 193 births were attended to in their own homes—or, in all, about one-fourteenth of the whole births in the city.

But the most direct and expansive effort to educate mothers, and to reduce infantile mortality, belongs to the Health Visitors appointed by the Town Council. Last year the two Visitors—one of whom gives about half her time to the visitation of dirty houses—visited the homes of 2,708 infants, out of 4,502 actually born within the year. As these visits were almost wholly confined to births in the smaller houses—houses of one to three rooms—they embraced nearly three-fourths of all the births in such houses. The infants visited were distributed, as follows, over the five chief registration districts of the city:—

	Infants visited.	Dead before visit.
St. Nicholas, . . . . .	1,531	... 55
St. Machar, . . . . .	539	... 60
Nigg (Torry), . . . . .	302	... 6
Woodside, . . . . .	145	... 7
Old Aberdeen, . . . . .	54	... 2

In St. Nicholas, about nine-tenths of the babies were visited; in St. Machar, about one-fourth; in Torry, fully three-fourths; in Woodside, about three-fifths; and in Old Aberdeen, fully two-thirds. The district of St. Machar contains most of the larger houses in the town.

In many cases, no instruction or assistance of the mother was required, but in others, especially in those where no medical man had been in attendance—and this was true of about half the mothers visited—there was often distinct need for such advice as the Visitors could give.

The Visitors say that their visit is very rarely resented. The Visitors themselves find that mothers are becoming more accustomed to such visitation, more ready to welcome it, more willing to discuss the details of the management of the baby, and—what is a good sign of the general educational effect—they not infrequently learn that the mother had previously been discussing and criticising with some neighbour, after her confinement, the instructions which the neighbour had received from the Visitors.

The Visitors give instructions in the bodily care of the infant—its cleanliness and clothing, and especially in the feeding—the necessity for a pure or sterilised milk; the scrupulous cleanliness of feeding-bottles, where the baby is bottle-fed; the danger of the tube-bottle, with its usually foetid tube; the harmfulness of the dummy teat; and the regulation of the feeding generally.

The tube-bottle is, unfortunately, dying out very slowly. Mothers think it more convenient than the tubeless bottle, but forget that the time spent in properly cleaning a tube-bottle could be better bestowed in feeding the child with the tubeless bottle. Moreover, it is very rare to find that the tube is kept clean. Usually, even with apparently careful mothers, the tube is lined with a foul curd, teeming with millions of germs.

The harmfulness of the tube-bottle would find greater expression in the infant mortality of the city were it not that among the working classes the baby is much more frequently breast-fed than bottle-fed. The principal exception in these classes is the illegitimate child, which is more often bottle-fed than breast-fed. Among the upper classes bottle-feeding is relatively more common than among the working classes.

With the high proportion of breast-feeding among the working classes of Aberdeen, it is disappointing to find that there is still too large a loss of life among their infants. But many mothers, unfortunately, do not confine their baby to breast-feeding, although ample. They too frequently offer it a little from the common table.

In feeding a baby, whether from the breast or otherwise, the mother should make a strong point of previously washing her hands, as hands soiled from the work of a crowded household may easily soil the teat or nipple, and thus introduce harmful germs into the milk. Scrupulous cleanliness in all the relations of infant life is one of the most powerful factors in saving it from illness.

Some mothers also are not sufficiently careful in protecting the baby from cold. It is often lifted warm and perspiring from a cradle and carried by the mother into the chill air of an evening on calls and shopping errands. Sometimes as much harm comes from too many wraps inside the house and from want of ventilation of the room.

The large proportion of breast-feeding in Aberdeen gives, however, much hope for a still more greatly reduced infantile mortality, if only the mothers can be sufficiently informed and trained as to their duties.

With this object in view, I would venture to make two suggestions:—(1) the adoption of the Notification of Births Act, and (2) the increase, by some means, of the persons engaged in visiting infants.

We are at present dependent on the Registrars for information as to births, except in the case of births taking place within, or in connection with, the Maternity Institution—such births being notified to us by the Matron; and we find that on an average a birth is not registered until within one or two days of the expiry of the period of three weeks allowed for registration. Accordingly, the infant is almost always about three weeks old before it is visited by the Health Visitor.

Last year, out of the 561 deaths that occurred among infants during the first year of life, 191, or fully one-third, died during the first four weeks after birth, and were outside possible help from the Health Visitors, as even those that died in the fourth week could scarcely have benefited by such visitation within a day or two of death. A considerable proportion of these 191 infants would have died whatever instructions had been given to the mother at birth; and many, of course, had the benefit of medical attendance, although often sought too late. There must, however, be a considerable residue of infants that would have survived under proper care and treatment. This is borne out by the relatively small proportion of deaths from prematurity and debility among children of the better class, as will be seen from the results of a special inquiry made last year into infantile mortality. But the number of deaths during the first week is not the whole measure of the need for early visitation, for many infants that died after the first month succumbed from vicious habits of feeding that were started immediately after birth, especially in the numerous instances where there was no medical man in attendance. It is much easier to stop such habits at the beginning than later, and it is nearly always more possible to prevent illnesses than to cure them.

It would, therefore, in my opinion, increase the effectiveness of the work of the Health Visitors if the Town Council were to see their way to consider again the Notification of Births Act, 1907, with a view to its adoption.

It will be recollected that the Act was brought before the Public Health Committee soon



after its passage through Parliament, and that the Committee recommended its adoption by the Town Council.

In deference, however, to the representations of an influential deputation from the Aberdeen Medico-Chirurgical Society, the Town Council remitted the matter again to the Public Health Committee for further consideration. In a memorandum submitted by the deputation, the Society stated that they desired it to be clearly understood that its objections were not directed against the principle underlying the Act, which they considered a good one and calculated to reduce the infantile mortality, but they strongly objected to the method of working the Act, in so far as it laid upon medical men the burden of notifying births at which they had been present, and that under a penalty if they failed to do so. They considered that the responsibility for notification should rest with the relatives or person in attendance on the mother, and that it was contrary to the usage and traditions of the medical profession for the medical attendant to give information regarding his patient. They also objected to the Act providing no remuneration to the medical man for notification, although exposing him to a penalty for failure to notify, and they expressed the belief that if the Town Council, in common with other municipal bodies elsewhere, declined to adopt the Notification of Births Act, it might lead to a revision of the terms of the Act.

Although nearly a year has passed since the meeting of the Council at which this representation was submitted, there is, as yet, no promise or indication of any amendment of the Act. I would, therefore, suggest, in the interests of the public health, that the Act should now be adopted on the understanding that the Public Health Department will regard the responsibility for notification as resting upon the relatives.

If the Act were adopted, it would probably be necessary to add to the staff of Health Visitors, and, in any event, an addition is desirable. As already mentioned, one-half of the time of one of the two existing Visitors is devoted to the inspection of dirty houses. There is more than sufficient work for the whole time of three Visitors in visiting babies alone. At present it is not practicable to visit every case that should be visited—some districts of the town receiving few visits—but what is more felt is the impossibility of making re-visits to more than a very small fraction of the cases. Re-visiting I regard as of considerable importance, in order to ensure that the instructions are being attended to. Instructions from a Visitor who is known not to be likely to call again run the risk of being disregarded.

In this connection I have to acknowledge with gratitude the valuable assistance given to the Health Visitors and the Public Health Department by certain ladies connected with the branch of the British Women's Temperance Association in Aberdeen, who, of their own accord, voluntarily undertook to assist the Visitors of the Council in their work, and especially in relieving them, in part, of secondary visits in cases where prolonged visiting is necessary.

Although the Lady Visitors, of whom there are at present 14, have been selected by the British Women's Temperance Association, they are not working directly under its auspices, and do not seek to regard themselves in this field of work as temperance missionaries. It might easily give rise to misunderstanding among those visited if they were to be so regarded. The ladies undertaking this work are known as the "Infant Health Committee."

After an opening address to the Association, in which I explained the character of the work generally and the lines on which it could be most advantageously undertaken, the ladies specially devoting themselves to the work met with Miss Macmillan, one of the Health

Visitors, on some six or seven occasions, and received from her a course of instruction, which she had arranged in consultation with me. Such instruction was felt to be desirable, in order to secure uniformity in the advice to be given to mothers. The first visit in every case is made by one of the Health Visitors. If further visits are necessary, the case is handed over to one of the Lady Visitors, who receives, at the same time, a sheet with the name and particulars of the case, and with a request that she will make an entry on the sheet on the condition of the child at each visit. She is also asked to consult with the Health Visitors or myself if in any difficulty, and, in order to ensure that the Lady Visitors will keep in touch with the Department, monthly conferences between the whole of the Lady Visitors and the Health Visitors take place. Fortnightly meetings were at first tried, but were found to be unnecessarily frequent. It has been made a condition of the work by the Lady Visitors that they will be very careful in the distribution of charity, and seek rather to give such help as may be required through the agency of existing charitable associations. For it is easy to see that if their visits became associated with the distribution of charity, it might interfere with the attainment of the real object of their visits. So far as can be judged from an experience of some months, the interest of the Lady Visitors is well sustained, and their aid promises to be very valuable.

I purposely limited their number at the beginning, until it was seen how their work would harmonise with that of the Health Visitors. The arrangement is working so well that there is no reason why their number should not be largely increased; and the question is raised, although it may appear a little ungenerous to the British Women's Temperance Association, whether the ranks of the Voluntary Visitors should not receive recruits from other sources besides the Association. The fourteen Lady Visitors at present at work are taking charge of 22 babies, out of several hundreds that might, with advantage, be similarly cared for.

This body of voluntary workers might be linked up with a scheme which has recently been suggested by some ladies and gentlemen interested in the welfare of the infants of the city, who think that a school or club for mothers, on the lines of the school in St. Pancras, would be of great assistance in promoting the reduction of infantile mortality.

I have discussed this scheme at various times with those interested in it, and have also made myself acquainted with the work in St. Pancras, and I am satisfied that such a scheme would be highly advantageous, and would provide a centre for the co-ordination of all voluntary efforts connected with the care and management of infants. The promoters are anxious to work it, so far as practicable, in connection with the Public Health Department of the city, and hope that the Town Council may so far recognise its value, as an important adjunct to the work of their own officials, as to make an annual contribution towards its maintenance.

The intention is to provide a meeting-place or club, where mothers, with their babies, could come together for, say, an hour weekly, in order to obtain fuller instruction and explanations in the management of the baby, and in the care of the mother's own health during nursing, than can be given to the mothers individually in their own homes. They would collectively listen to a short talk on infant management from one of the Health Visitors, if the Town Council so approved, or from one of the ladies associated with the club. Experience has shown that at such meetings it is possible to give instructions without offence on certain points that might be thought to have too personal an application if given to the

individual in her own home—for example, on matters of cleanliness of mother and baby, abstention from alcohol, and the like. Practical lessons would also be given in the cookery connected with baby life, and in the clothing of babies; and an effort would also be made to provide the mothers with a nutritious meal. Voluntary workers would be found to relieve the mothers at the club of the charge of their infants during the hour, and provision would be made for weighing babies, in order to interest mothers in their progress.

An important function of such a club would be the instruction of expectant mothers, regarding whom information is often obtainable by the Health Visitors on their rounds, as also from the Maternity Institution. It would be a great gain to bring as many of these mothers together as might be practicable, so as to give them such instructions as would enable them from the first to attend their infants in the right way. It is really only by seeing the mothers before confinement that it is possible for the Health Visitors to assist in determining whether the infant is to be breast-fed or bottle-fed, or, if bottle-fed, is to start with the right form of bottle.

I understand that the citizens interested in the proposal intend to approach the Town Council or the Public Health Committee, with a view to obtaining their approval and support.

Appended to the report is an analysis of information obtained in a special inquiry during the past year into infantile mortality in the city.

*Mortality at "School" Age-Period (5-15 years).*—The mortality at this period, which for several years has been showing a remarkable decline, was slightly higher last year (2·5 per 1,000 of population at the "school" age) than in the preceding year, when it was 2·4. The rate last year, however, excepting that for 1906, is the lowest on record, and is almost exactly one-third of the average rate of thirty to forty years ago.

A hope was expressed in the report for 1906 that the School Board might soon be able to arrange for systematic medical inspection of the children under its care. No such arrangement was, however, made last year, but it is understood that the Board has the matter at present under consideration, with a view to steps being immediately taken in this direction. It may be that, judging from my experience in a sample examination of certain schools in 1902, for the Royal Commission on Physical Training, that the Aberdeen children are less in need of medical inspection than the children in some other towns; but there can be no doubt that systematic medical inspection would reveal many defects which are at present being overlooked, to the detriment of both the health and the mental progress of the children. Even if it resulted only in greater attention being paid to defects of sight and hearing, it would be a substantial gain.

Infectious skin diseases are too common among school children in Aberdeen, notably itch and ringworm. I have had my attention frequently directed by teachers to cases of these diseases. Proper medical supervision might be expected to bring nearly all such cases to light, and, with the help of the Public Health Department, it is not too much to hope that these diseases might in a few years be almost exterminated. With this in view, I ventured to suggest to the Town Council the erection of a suitable building within the grounds of the City Hospital for dealing with such cases of these diseases as are not receiving medical attention at home; and I am glad to be able to report that the suggestion was approved, and that the building has been included in the extension of the hospital now about to be undertaken. It is not infrequent to find, when inquiry is made regarding a case of itch reported from a school,

that the whole family to which the child belongs is suffering from the disease. We have on several occasions removed the family to hospital, when accommodation was available, and put them under treatment until cured, and have, at the same time, had the house disinfected. We have not found in such cases that the disease recurred soon afterwards. The treatment of ringworm is, as medical men know, on a different footing, on account of the length of time usually required to effect a cure, and there we must still largely trust to the treatment available from the private practitioner or in the Dispensary and Royal Infirmary; but I am hopeful that, with the approval of the Town Council, we may be able to deal with some of these cases at the City Hospital—if not as in-patients, at least as out-patients. By far the most rapid and sure way of curing this disease is by the use of X rays. This is a mode of treatment rarely available in private practice on account of the expense of the apparatus, but if the Town Council were to sanction the supply of such apparatus for the City Hospital, there is no reason why a number of cases should not be treated there.

In this connection, it has been suggested that the notification of cases of itch and ringworm should be made compulsory; and there is much to be said in favour of the suggestion if a real attempt is to be made to root out diseases, which, although they may be said not to be greatly injurious to health and never fatal, are, nevertheless, in many homes more detested than attacks of scarlet fever or measles or other notifiable zymotics. One must also take into account their interference with school attendance. In the case of ringworm, months of absence from school may be necessary if the child is to be refused entry so long as the disease remains uncured.

I have, in almost every annual report, referred to the need for a larger provision of play and recreation grounds for children, and, in the immediately preceding report, mentioned that a distinct gain in this direction had accrued from the demolition of a large area of slum property in the Gallowgate, and the allocation of a portion of the ground for recreation purposes. There is still, however, a distinct lack of sufficient playground provision in many parts of the city, and it is particularly disappointing to find that in the newer parts of the town, where it might be possible in the course of feuing to leave open spaces for playgrounds, no such provision is being made. This cannot fail to give cause for distinct regret in years to come.

It is interesting to note, in connection with children of the "school" age, that the School Board has recently started a school for defective children, and have made provision for conveying the more remotely situated children from and to their homes at the expense of the Board. This is a step in the right direction, and, in some other towns, has followed only upon the institution of medical inspection.

The Sanitary Inspector refers in his report to the circular of the Local Government Board and the Scotch Education Department in regard to the cleansing and disinfection of schools, and to the satisfactory way in which this cleansing is undertaken by the School Board in Aberdeen. I am satisfied from personal observation that the methods adopted here leave little room for improvement, and the remarkably low death-rate among children of the "school" age in this city would appear to indicate that the conditions of school life are very satisfactory. There are few towns in which so much intelligence has been directed towards the erection of well-constructed schools on good hygienic principles, and where so much attention is given to their proper maintenance and the state of cleanliness.



TABLE IV.—MORTALITY AT VARIOUS AGE-PERIODS FROM VARIOUS CAUSES.

AGE.	ALL CAUSES.	Zymotic Diseases.			Tubercular Diseases.		Respiratory Diseases.			Circulatory Diseases.		Dis. of Urinary System.	Nervous Diseases.		Dis. of Digest. Syst. incl. Diarrhoal.	Malignant Diseases.	Developmental Diseases (ex. old age).	Accident and Violence.	Debility, Atrophy, Inanition.		Miscellaneous.
		Miasmatic.	Veneral.	Septic.	Phthisis.	Other Tubercular.	Pneumonia.	Bronchitis.	Other Respiratory.	Cerebral Haemorrhage, & Hemiplegia.	Other Circulatory.		Convulsions.	Other Nervous.					Under age of 1 year.	Above age of 60 years.	
A.—NUMBER OF DEATHS—YEAR 1907.																					
Under 1 year,	561	66	7	3	3	16	57	48	9	4	5	0	36	8	70	0	140	10	65	...	14
Under 5 years,	817	132	7	3	7	72	103	59	12	4	7	0	47	17	93	0	141	26	...	...	22
5—15 „	99	13	0	1	17	20	5	2	1	0	3	4	2	7	6	0	1	5	...	...	12
15—25 „	107	5	0	2	48	9	6	0	2	0	11	4	0	6	5	2	0	5	...	...	2
25—60 „	614	9	1	11	112	13	41	38	10	34	93	21	2	42	38	73	1	31	...	...	44
60+ „	837	17	1	5	7	0	41	90	12	121	188	48	0	33	36	106	0	19	...	92	21
ALL AGES,	2474	176	9	22	191	114	196	189	37	159	302	77	51	105	178	181	143	86	...	...	101
B.—DEATHS PER 100,000 OF POPULATION AT EACH AGE—YEAR 1907.																					
Under 1 year,	12036	1416	150	64	64	343	1223	1030	193	86	107	0	772	172	1502	0	3004	215	1395	...	300
Under 5 years,	3817	617	33	14	33	336	481	276	56	19	33	0	220	79	435	0	559	121	...	...	103
5—15 „	249	33	0	3	43	50	13	5	3	0	8	10	5	18	15	0	3	13	...	...	30
15—25 „	292	14	0	5	131	25	16	0	5	0	30	11	0	16	14	5	0	14	...	...	5
25—60 „	982	14	2	18	179	21	66	61	16	54	149	34	3	67	61	117	2	50	...	...	70
60+ „	5890	120	7	35	49	0	289	633	84	851	1323	338	0	232	253	746	0	134	...	647	148
ALL AGES,	1417	101	5	13	109	65	112	108	21	91	173	44	29	60	102	104	82	49	...	...	58
C.—DEATHS PER 100,000 OF POPULATION AT EACH AGE—AVERAGE FOR TEN YEARS—1897-1906.																					
Under 1 year,	16652	1519	290	77	33	615	1210	1840	194	24	172	33	1307	484	3113	3	3720	250	1291	...	629
Under 5 years,	5173	846	69	21	34	351	474	527	81	11	44	13	337	200	815	2	812	106	...	...	211
5—15 „	303	40	0.6	4	44	62	17	6	3	1	22	7	3	20	27	2	0.6	21	...	...	23
15—25 „	464	23	0.3	11	196	37	25	3	6	2	33	12	0.6	18	32	4	0.3	20	...	...	40
25—60 „	1196	34	5	26	224	25	96	54	25	65	181	43	0.2	69	78	119	0.2	66	...	...	92
60+ „	6475	170	8	56	85	10	326	834	119	826	1486	283	3	191	409	567	0	135	...	700	278
ALL AGES,	1756	144	11	20	142	75	129	153	32	92	203	44	42	72	174	90	100	57	1291	700	95

In view, however, of the fact that nearly all the schools are ventilated by mechanical means, I may be permitted to point out that there is a tendency at the present time in some well-informed quarters to return to the old system of natural ventilation, but planned with larger knowledge. I have had, for nearly fifteen years, experience of mechanical ventilation in the wards of the City Hospital, and I have, for several years, had a feeling that, where a ward is so constructed that cross ventilation can be obtained from windows in opposing walls, the ventilation is distinctly more satisfactory than mechanical ventilation. I was, therefore, much interested in finding that Dr. Reid, the Medical Officer of Staffordshire, and a native of this city, had entertained similar views for some time, and had persuaded his Council to give effect to them in the erection of a new school, with results that seem, according to a recent report by Dr. Reid, to be entirely satisfactory. In order, however, to obtain such a mode of ventilation, it is necessary that each schoolroom should be built like the wards of a hospital, with an outer wall on two sides. Such an arrangement requires, of course, more space for the school—an important consideration in towns—but the newer schools in this city are usually being erected where there is no serious restriction to extent of site. There can be no doubt that the existing mechanically ventilated schools are much better than the schools which they replaced, and that mechanical ventilation is almost the only satisfactory way of ventilating a building in which the rooms are not open, by windows on opposite sides, to the outer air. Buildings mechanically ventilated require to have all the windows closed in order to permit of the even distribution of the pumped-in air to the various rooms. It is impossible to open the windows of one room without, by thus providing a too ready exit for the air of the room, diminishing the supply of air to adjacent rooms. In mechanically ventilated buildings, the air is always under a pressure slightly above that of the ordinary atmosphere, and it may be possibly due to this fact that the air of such buildings is often felt to be somewhat oppressive and lacking in invigoration; but part of this feeling, of which I have often had complaints at the City Hospital, may be due, though certainly not entirely, to the incoming air being too warm or too dry. In the City Hospital, for this reason, we have for years been endeavouring to work the system with the windows more or less open; and in the additions about to be made I have suggested that the old system of ventilation be returned to, namely, cross ventilation, and heating with hot-water pipes or radiators.

It ought, however, to be added, in justice to the School Board, that the system of mechanical ventilation in the Aberdeen Public Schools is admirably managed, and leaves nothing to be desired if such a system is to be regarded as the only proper one, or the best, as indeed it is, for the schools as constructed. It is only in respect of future schools that such remarks as I have made would find application.

*Mortality at "Adolescent" Period (15-25 years).*—The death-rate at this period during the past year was only 2·9 per 1,000 of the population at that age, and is by far the lowest recorded—the next lowest being 3·4 in the preceding year. The death-rate at this period is now only a half of what it was during the years 1866-1875. This is a gratifying decrease if it can be maintained, and would appear to indicate that the "adolescent" period of age is becoming as healthy as the "school" period. Ten years ago, the rate at the former period was almost steadily a half higher than at the latter period.

The diseases, in which the decline of mortality at this age-period is most apparent, are diseases of the digestive system, pneumonia, phthisis, and zymotics.

It is difficult to determine exactly what conditions may specially have tended to reduce the death-rate at this age-period in recent years, but there can be scarcely any doubt that the increased attention in these years to the sanitary condition and ventilation of workshops must have had some influence. Out-door games, which are of great advantage in promoting health, cannot be said to be more freely taken part in at the present time than they were, say, ten years ago. It is, perhaps, rather to be deplored that so many thousands of young men spend a Saturday afternoon in watching a contest, in place of engaging in games of their own.

At this age-period it is becoming apparent that much more attention is being given than formerly to the preservation of teeth and the replacement of lost teeth; but such attention ought to begin sooner, and will no doubt be stimulated in future by the medical inspection of school children. It is unfortunate that, despite the great advance in the general health of the community, teeth appear as liable as ever to decay. There are few things in personal hygiene that so amply repay the trouble devoted to it as the preservation of the teeth. Good health is scarcely possible, especially in the sedentary life so common now-a-days, without good mastication.

*Mortality at "Mature" Age-Period (25-60 years).*—An equally gratifying fall in the mortality at this period has been observed during the past two years, the rate last year being 9·8 per 1,000 of the population at that age, as compared with a rate about twice as high forty years ago. Even so recently as 1902, the rate was nearly 13, and has steadily fallen since that time.

The groups of diseases in which the fall at this age has been most pronounced are tuberculosis, pneumonia, and diseases of the circulatory and digestive systems.

*Mortality at "Post-Mature" Age-Period (60 years and upwards).*—The death-rate, 58·9 per 1,000, at this, the latest of the age-periods, is slightly higher than in the preceding year, but, next to that rate, it is the lowest on record. The decline at this period is naturally not so great as at the other age-periods. The rate for last year was about five-sixths of the rate prevalent in 1866-1875; but the greater part of the fall has taken place during the last four or five years.

It has, of course, to be kept in view that the rate for each age-period last year is slightly underestimated, on account of the population not being as high as stated by the Registrar-General, but even when allowance is made for such error, the rates would still remain among the lowest recorded.

*(b) Mortality in Relation to Cause.*

Tables IV. and V. give details of this for the past year, and afford also material for a comparison with previous years.

It is necessary to note that, in the classification of deaths in these Tables, apoplexy and hemiplegia have for the first time been transferred, as is now done in the returns of the Registrar-General, from the group of nervous diseases to that of diseases of the circulatory system, consequently swelling considerably the latter group at the expense of the former, and elevating diseases of the circulatory system to the first place in the order of frequency as causes of death. Thus the chief causes of death during the year were, in the order of their numerical importance, diseases of the circulatory system, with 461 deaths, or 19 per cent. of

TABLE V.—DEATHS AT ALL AGES FROM SELECTED CAUSES

(per 100,000 of population).—Years 1866-1907.

Year,	Smallpox.	Scarlet Fever.	Diphtheria.	Measles.	Whooping Cough.	Influenza.	Typhus Fever.	Typhoid Fever.	Tuberculous Diseases.		Dis. of Digest. Sys. (incl. Diarrhoea).	Cancer and other Malignant Diseases.	Bronchitis.	Pneumonia.	Diseases of Circulatory System.
									Phthisis.	Other Tubercular.					
<b>1907, . . .</b>	0	3	11	21	47	13	0	4	109	65	102	104	108	112	173
1906, . . .	0	4	11	42	39	17	0	2	124	67	127	82	99	105	181
1905, . . .	0	7	6	20	20	20	8	2	121	57	149	87	120	128	198
1904, . . .	0	13	7	58	91	8	5	2	120	75	160	99	130	130	204
1903, . . .	0	8	8	73	27	14	0	2	143	64	183	83	142	114	217
1902, . . .	0	7	13	11	82	29	0	2	136	76	153	88	144	134	225
Average 1902-1906,	0	8	9	41	52	18	3	2	129	67	154	88	127	122	205
1901, . . .	0·6	6	10	41	10	27	0	10	132	79	196	95	162	124	220
1900, . . .	0	7	20	37	60	54	0	7	166	66	190	87	170	123	211
1899, . . .	0	11	20	90	34	34	0	15	153	78	180	98	159	111	180
1898, . . .	0	26	25	15	73	23	1	10	162	94	217	88	173	112	197
1897, . . .	0	21	10	17	15	25	0	5	157	85	187	92	183	106	189
Average 1897-01,	0·1	14	17	40	38	33	0·2	9	154	80	194	92	169	115	199
„ 1886-95,	0·6	18	16	73	60	34	1	12	185	70	199	76	217	105	169
„ 1876-85,	0·4	24	22	32	67	1	13	21	215	87	189	65	268	77	125
„ 1866-75,	2·6	72	23	53	67	6	37	42	282	121	240	59	267	67	133



the total deaths from all causes; diseases of the respiratory system, with 422 deaths, or 17 per cent. of the total deaths; tuberculous diseases, with 305 deaths, or 12 per cent. of the total deaths; malignant diseases (chiefly cancer), with 181 deaths, or slightly over 7 per cent. of the total deaths; diseases of the digestive system, including diarrhoeal diseases, with 178 deaths, or 7 per cent. of the total deaths; miasmatic diseases, with 176 deaths, or 7 per cent. of the total deaths; developmental diseases, with 143 deaths, or slightly under 6 per cent. of the total deaths; and nervous, with 156 deaths, or 6 per cent. of the total deaths. Then followed diseases of the urinary system, with 77 deaths; septic diseases, with 22 deaths; and venereal diseases, with 9 deaths. In 86 cases—or only one fewer than last year—death was assigned to accident or violence; and in 157 cases to debility or atrophy, of which 65 were among children under one year of age, and 92 among persons of 60 years of age and upwards.

The causes of death were, as usual, very unequally distributed over the various age-periods (Table IV.).

Among children under 5 years of age, the principal causes of death were diseases of the respiratory system, which accounted for about one-fifth of the deaths; developmental diseases, including prematurity, for about one-sixth; miasmatic diseases, for one-eighth; diseases of the digestive system, including diarrhoea, for one-ninth; tuberculous disease (chiefly tubercular meningitis and peritonitis), for one-tenth; and diseases of the nervous system, for one-thirteenth. In 26 cases, death was due to accident, 13 being caused by burns or scalds.

At the "school" age-period, by far the most frequent cause of death during the past year was tuberculous disease, with about one-third of the deaths, being, however, a somewhat smaller proportion than in the preceding year. Miasmatic diseases followed with one-seventh; nervous diseases, with one-eleventh; diseases of the respiratory system, with one-twelfth; and diseases of the digestive system, including diarrhoeal diseases, with one-sixteenth, or exactly the same as in the preceding year. At this age-period, accident and violence accounted for 1 in every 20 deaths. There was only one death from burning or scalding.

At the "adolescent" age-period, tuberculous diseases again come to the front, with slightly more than one-half of the total deaths, and were followed, at a long interval, by diseases of the circulatory system, with one-tenth; diseases of the respiratory system and diseases of the nervous system, each with one-sixteenth; and diseases of the digestive system (including diarrhoeal diseases) and miasmatic diseases, each with one-twentieth.

At the "mature" age-period, tuberculous diseases shared with diseases of the circulatory system the first place, each causing about one-fourth of the deaths. This is about the same proportion as in the preceding year. These were followed by diseases of the respiratory system, with one-seventh of the deaths; malignant diseases, with one-ninth; diseases of the nervous system, with one-fourteenth; diseases of the digestive system (including diarrhoeal diseases), with one-sixteenth; and diseases of the urinary system, with one-thirtieth. Accident and violence accounted for 1 death in every 20, which is a slightly smaller proportion than in the preceding year.

At the "post-mature" age-period, diseases of the circulatory system stood, as usual, above all the others, and accounted for more than 1 in every 3 of the total deaths. Diseases of the respiratory system came next, with one-sixth of the deaths; malignant diseases, with one-eighth; and diseases of the urinary system, with one-seventeenth. Accident and violence accounted for 1 in every 44 deaths.

The incidence of the various groups of diseases at different ages can be readily appreciated from a perusal of Table IV. B., where the rates for each group per 100,000 of the population is given for each age-period. It will be there seen that miasmatic diseases exacted, as usual, by far their largest toll among children under 5 years of age, although not passing by persons of the "post-mature" age-period, among whom there were several deaths from influenza. Tuberculous diseases were also most fatal among children under 5 years of age, but had a heavy incidence, especially in the form of pulmonary phthisis, at the most active and productive ages of human life, namely, the "adolescent" and "mature." Diseases of the respiratory system were chiefly diseases of the very young and the very old, and took only a small part in the mortality among persons from the "school" age up to middle life.

The same is true of diseases of the nervous system, if convulsions be included, and also of diseases of the digestive system. Diseases of the circulatory system, as a cause of death, were chiefly confined to the more advanced ages, and especially to persons above 60 years of age. This was true also of diseases of the urinary system, and still more of malignant diseases.

#### VARIATIONS SINCE 1866 IN MORTALITY FROM SELECTED CAUSES.

The variations since the year 1866 in the mortality from selected causes at all ages can be conveniently followed in Table V.

The total mortality from the more common *miasmatic diseases*, although not one of the lowest on record, was considerably under the average. The death-rate from scarlet fever was the lowest recorded for many years, and only one-twenty-fourth part of its average in 1866-1875. The steady decline in the mortality from this disease is one of the most remarkable features of the zymotic rates in recent times. Typhoid fever also showed a very low death-rate, being only 4 per 100,000, as contrasted with 42 in 1866-1875. This follows upon an average of 2 for each of the preceding five years. The slight increase in this rate is partly due to a slight spread to Aberdeen of infection from the large outbreak during the year in Peterhead, and to the inclusion of, at least, 2 deaths of extremely doubtful cases of typhoid. The death-rate from diphtheria, although less than one-half of the rate prevalent thirty years ago, was slightly above the average for the preceding five years. The death-rate from measles was low, as, to a less extent, was also the death-rate from whooping cough.

The death-rate from *pulmonary phthisis* exhibited a gratifying decline during the year, being distinctly the lowest recorded, and only slightly above one-third of the average rate in 1866-1875. The mortality from *other tuberculous diseases* was also low, but not the lowest on record. It was about one-half of the rate in 1866-1875. It will be observed that, for the preceding two years, the death-rate from phthisis showed a very slight tendency to increase, which I ventured to suggest, in my preceding annual report, as being possibly associated with the industrial depression in the city during these years. There was, however, no apparent diminution of the depression in 1907, and the fall in the phthisis death-rate is, therefore, the more satisfactory.

The mortality from *cancer*, it will be observed, has, after a distinct fall in each of the preceding two years, unfortunately risen to a higher point than it has ever reached before. This mortality-rate, which was 104 last year, is now nearly twice as high as it was in 1866-1875. I had remarked in a previous report that cancer seemed to increase simultaneously with the decrease of phthisis, and the experience for the past year confirms for the moment

that observation, although it is scarcely possible that these two kinds of disease can bear any relationship to one another. The steady increase of cancer in recent times is one of the few distressing features in the vital statistics of modern times. There is no disease so relentless in its grip, and, as yet, apart from surgical extirpation, so hopeless of cure. It affects all races in all parts of the world with almost equal severity.

The problems of its cause and cure are now being assiduously investigated in several important Research Institutes devoted solely to such work, and staffed with a large number of highly-skilled bacteriologists and chemists. Their labours have not yet resulted in any practical benefit to humanity, but the problems are exceedingly difficult, and will require probably many years for their elucidation. Meanwhile, considerable progress is being made in ascertaining something of the nature of the disease, and it has been clearly established, by experiments on animals, that it can under suitable circumstances be transmitted from one animal to another; but it by no means follows that cancer is, therefore, to be ranked with the group of infectious diseases; and, certainly, the nature of the infection is in any case very different in its character from the infection of an ordinary zymotic. The scientific experts engaged in these investigations are, I believe, not hopeless as to their reaching beneficent results, but they expect that, except for some lucky chance, several years of patient investigation will probably be necessary before such results are achieved. It is a matter for congratulation that an important fellowship of £400 a year has recently been placed by the Hon. A. McRobert at the disposal of the University of Aberdeen for Cancer Research, and that already a valuable paper has been produced by its first holder.

The death-rate from *bronchitis*, it is interesting to observe, has fallen almost as greatly within the last thirty years as the death-rate from *phthisis*, although last year it showed a slight increase as compared with the preceding year. The rate, however, is the second lowest on record.

The death-rate from *pneumonia* also showed a slight increase last year, but is lower than the average for the preceding five years. It is, however, still nearly twice as high as it was in 1866-1875. The rise in the death-rate from pneumonia is difficult to explain, if it is to be taken as genuine, and not due to improved diagnosis. Pneumonia is, in many cases, caused by a special micro-organism, and is undoubtedly infectious, although not highly so. It is important, therefore, that reasonable precautions should be taken against its spread when it occurs in a household. That these precautions are desirable is emphasised by the fact that pneumonia has, on an average, during the past five years, caused nearly as many deaths as all the ordinary infectious or miasmatic diseases taken together. In this respect it takes about equal rank with *phthisis*, and the time may soon come when pneumonia, in its relation to public health, will begin to receive nearly as much attention as *phthisis* and zymotics in general.

The death-rate from *diseases of the digestive system, including diarrhoeal diseases*, during last year, was by much the lowest on record, being only 102 per 100,000 of population, as compared with 127 in the preceding year, which is the next lowest. The rate has fallen greatly since 1866-1875, when it was about two and a half times as high as during last year.

The fall in the *phthisis* death-rate, combined with the fall in the death-rate from diseases of the digestive system, is more than sufficient to account for the drop in the death-rate from all causes last year, as compared with the preceding year.



## MORBIDITY AND MORTALITY FROM ZYMOTICS.

*(Tables VI., VII., and VIII.)*

Table VI. gives the distribution of the commoner zymotic diseases as notified or discovered throughout the various wards of the city during the past year, and it will be observed that the zymotics were, on the whole, fairly evenly distributed. There were, however, some exceptions. Scarlet fever was most prevalent in Torry, and least prevalent in Woodside. Diphtheria was also most prevalent in Torry, as also Rosemount, and least prevalent in Woodside. On the other hand, measles was most prevalent in St. Andrews and least in Torry. Whooping cough was most prevalent in Greyfriars, and least in Rubislaw. In St. Clements and Rosemount there were no cases of typhoid, while the maximum prevalence was in St. Nicholas. Puerperal fever was most abundant in St. Nicholas and St. Andrews. The ward chiefly associated with deaths from phthisis was Greyfriars, and with other forms of tuberculous disease, St. Nicholas.

Table VII. gives the incidence of each of the commoner infectious diseases during the twelve successive months of the year, and shows that scarlet fever was at its minimum in April, with 12 cases, and attained its maximum in October, with 91 cases; that diphtheria was at its minimum in June, with 4 cases, and at its maximum in January, with 24 cases; that typhoid fever gave no cases in September, and was at its maximum in July, with 6 cases; that erysipelas was at its minimum in April, with 7 cases, and at its maximum in the immediately preceding month, March, with 27 cases. As regards the non-notifiable diseases, for which the numbers are less reliable, being obtained largely from intimations through the Attendance Officers of the School Board, the minimum for measles was in May, with 1 case, and the maximum in January, with 142 cases; while the minimum for whooping cough was in July, with 10 cases, and the maximum was in January, with 153 cases.

Table VIII. contains a comparison of the prevalence of the various zymotics in 1907, with the prevalence in each of the preceding ten years. The averages for this decade and the previous decade are also given. The number of sicknesses is stated for each disease, with the number of deaths, as also the case-mortality, or per-centage of deaths to sicknesses.

It is necessary to bear in mind that the compulsory notification of measles and whooping cough was discontinued early in February, 1903. Since that time, as has just been stated, information in regard to cases of these diseases has been obtained chiefly through the School Attendance Officers and, to a slight extent, by voluntary information from parents. This affects the case-mortality for these two diseases, as since 1903, the cases intimated can form only a proportion—although possibly a fairly large proportion—of the cases actually occurring. This naturally tends to heighten the apparent case-mortality, as the mortality-rate has to be calculated upon too small a number of cases.

The table shows that, during the past year, the total known cases of the seven zymotics embraced in the table were greatly under the average for the preceding two decades, and lower than in any single year in the last decade, except 1905.

No zymotic was distinguished by exceptional prevalence, the most prevalent being whooping cough, with 669 cases; scarlet fever coming next, with 492 cases; and measles, with 453. Typhoid fever produced 24 cases

*Small-pox.*—After a clear interval of three years, one case of this disease occurred in April



TABLE VI.—CASES OF INFECTIOUS DISEASE NOTIFIED OR DISCOVERED—Year 1907.

(Not corrected for transferred deaths—see page 5.)

DISEASE.	AGE OF PATIENTS.			WARD OF CITY.*											Total Cases.
	Under 5 years	5-15 years	15+ years	Woodside.	St. Machar.	St. Andrew's.	St. Clement's.	Greyfriars.	St. Nicholas.	Rosemount.	Rubislaw.	Ruthrieston.	Ferryhill.	Torry.	
<b>A. Compulsorily Notifiable.</b>															
Smallpox { Cases	...	...	1	...	...	...	1	...	...	...	...	...	...	...	1
Deaths	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Scarlet Fever { Cases	152	282	58	14	72	49	30	31	41	33	55	37	46	84	492
Deaths	4	...	1	...	3	1	...	...	...	...	...	...	1	...	5
Diphtheria..... { Cases	70	73	53	3	14	27	9	16	21	30	15	16	15	30	196
Deaths	11	5	3	..	...	4	1	3	1	5	2	1	...	2	19
†Typhoid Fever { Cases	...	9	15	2	3	3	...	1	5	...	2	1	4	3	24
Deaths	...	1	7	.	...	2	...	...	3	...	1	...	1	1	8
Typhus Fever { Cases	...	...	...	..	...	...	...	...	...	...	...	...	..	...	...
Deaths	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...
Erysipelas..... { Cases	11	16	185	8	25	22	16	34	33	16	11	18	13	16	212
Deaths	2	...	5	...	1	...	1	2	...	...	...	1	1	1	7
Puerperal Fever { Cases	...	...	13	...	...	3	1	1	4	1	..	1	1	1	13
Deaths	...	...	6	...	...	...	1	1	2	...	...	...	1	1	6
Epidemic Cerebro-Spinal Meningitis { Cases	2	1	1	...	1	1	...	...	..	1	...	...	...	1	4
Deaths	2	1	1	...	1	1	...	...	...	1	...	...	...	1	4
<b>B. Not Compulsorily Notifiable.</b>															
†Measles ..... { Cases	212	233	8	100	74	104	45	51	15	7	14	25	16	2	453
Deaths	33	3	...	4	4	3	3	12	3	1	...	5	...	1	36
†Whooping Cough { Cases	420	248	1	57	70	56	51	134	61	67	23	53	45	52	669
Deaths	79	4	..	2	13	10	2	16	10	6	2	5	5	12	83
Total { Cases	867	862	335	184	259	265	153	268	180	155	120	151	140	189	2064
Deaths	131	14	23	6	22	21	8	34	19	13	5	12	9	19	168
<b>Tuberculous Disease—</b>															
(a) Phthisis.....Deaths	7	18	167	14	17	21	9	26	23	20	11	24	15	12	192
(b) Other Tub. Diseases } Deaths	71	21	28	9	9	9	10	10	24	10	5	15	6	13	120
Influenza .....Deaths	1	...	22	3	4	2	1	1	2	3	2	2	2	1	23

\* Deaths occurring in Hospitals are assigned to the Ward of the City from which the cases were originally removed.

† Compulsory notification of these diseases ceased in February, 1908.

‡ Including Para-typhoid.

TABLE VII.—INCIDENCE OF INFECTIOUS DISEASE DURING THE TWELVE MONTHS OF YEAR 1907.

(Not corrected for transferred deaths—see page 5).

DISEASE.	1907.												Whole Year.
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	
<b>A. Compulsorily Notifiable.</b>													
Smallpox, ..... { Cases	...	...	...	1	...	...	...	...	...	...	...	...	1
Deaths	...	...	...	...	...	...	...	...	...	...	...	...	...
Scarlet Fever, ..... { Cases	15	13	16	12	17	18	23	46	69	91	87	85	492
Deaths	...	1	...	...	...	...	...	...	...	...	1	3	5
Diphtheria, ..... { Cases	24	17	21	15	9	4	13	20	18	15	22	18	196
Deaths	4	2	...	1	3	...	1	2	...	1	2	3	19
†Typhoid Fever, ..... { Cases	2	3	1	2	1	2	6	4	...	1	1	1	24
Deaths	1	...	1	1	1	1	1	1	...	...	...	1	8
Typhus Fever, ..... { Cases	...	...	...	...	...	...	...	...	...	...	...	...	...
Deaths	...	...	...	...	...	...	...	...	...	...	...	...	...
Erysipelas, ..... { Cases	16	13	27	7	17	11	13	24	18	26	21	19	212
Deaths	...	1	...	...	...	...	1	3	1	1	...	...	7
Puerperal Fever, ..... { Cases	1	1	2	...	...	...	1	...	2	2	3	1	13
Deaths	...	1	2	...	...	...	...	...	...	1	2	...	6
Epidemic Cerebro-Spinal Meningitis, { Cases	...	...	...	1*	...	1	...	...	1	...	...	1	4
Deaths	...	...	...	1	...	...	...	1	1	...	...	1	4
<b>B. Not Compulsorily Notifiable.</b>													
†Measles, ..... { Cases	142	62	15	10	1	4	7	4	4	20	65	119	453
Deaths	16	5	3	1	...	2	1	2	...	...	...	6	36
†Whooping Cough, ... { Cases	153	95	98	105	26	35	10	46	22	34	22	23	669
Deaths	13	16	6	10	8	11	2	2	6	2	3	4	83
<b>TOTAL, ..... { Cases</b>	<b>353</b>	<b>204</b>	<b>180</b>	<b>153</b>	<b>71</b>	<b>75</b>	<b>73</b>	<b>144</b>	<b>134</b>	<b>189</b>	<b>221</b>	<b>267</b>	<b>2064</b>
<b>Deaths</b>	<b>34</b>	<b>26</b>	<b>12</b>	<b>14</b>	<b>12</b>	<b>14</b>	<b>6</b>	<b>11</b>	<b>8</b>	<b>5</b>	<b>8</b>	<b>18</b>	<b>168</b>
<b>Tuberculous Disease—</b>													
(a) Phthisis, ..... Deaths	16	19	21	20	17	21	9	13	9	19	6	22	192
(b) Other Tub. Dis., Deaths	12	4	12	12	20	12	10	9	5	8	10	6	120
Influenza, ..... Deaths	9	7	1	1	1	...	...	1	...	1	1	1	23

† Compulsory Notification ceased in February, 1903.

\* Doubtful case.

† Including Para-typoid.

TABLE VIII.—MORBIDITY AND MORTALITY OF INFECTIOUS DISEASES

DURING EACH YEAR FROM 1897 TO 1907, INCLUSIVE.

(Not corrected for transferred deaths.)

DISEASE.		1907	1906	1905	1904	1903	1902	1901	1900	1899	1898	1897	ANNUAL AVERAGE.	
													1897 to 1906.	1887 to 1896.
A. Compulsorily Notifiable.														
Small Pox,	No. of Sickneses,	1	0	0	3	0	0	7	0	1	0	0	1.1	5.7
	No. of Deaths, ...	0	0	0	0	0	0	1	0	0	0	0	0.1	0.5
	Percent. of Deaths to Sickneses,...	0	0	0	0	0	0	14.3	0	0	0	0	9.1	8.8
Scarlet Fever, ...	No. of Sickneses,	492	151	215	589	465	321	385	371	342	1078	1053	497	662
	No. of Deaths, ...	5	6	11	21	13	11	9	10	16	38	29	16	25
	Percent. of Deaths to Sickneses,...	1.0	4.0	5.1	3.6	2.8	3.4	2.3	2.7	4.7	3.5	2.8	3.2	3.8
Diphtheria.	No. of Sickneses,	196	244	166	170	182	180	166	128	153	209	93	169	67
	No. of Deaths, ...	19	18	10	12	13	20	14	30	29	37	14	20	20
	Percent. of Deaths to Sickneses,...	9.7	7.4	6.0	7.1	7.1	11.1	8.4	23.4	18.9	17.7	15.1	11.8	29.9
Typhoid Fever, ...	No. of Sickneses,	24	16	23	37	26	46	163	109	138	180	58	80	94
	No. of Deaths, ...	7	4	4	4	4	3	15	10	22	14	7	9	14
	Percent. of Deaths to Sickneses,...	29.2	25.0	17.4	10.8	15.4	6.5	9.2	9.2	15.9	7.8	12.1	11.3	14.9
Typhus Fever, ...	No. of Sickneses,	0	0	98	34	0	0	0	0	5	5	0	14	12.1
	No. of Deaths, ...	0	0	14	9	0	0	0	0	0	2	0	2.5	1.6
	Percent. of Deaths to Sickneses,...	0	0	14.3	26.5	0	0	0	0	0	40.0	0	17.9	13.2
B. Not Compulsorily Notifiable.														
Measles, ...	No. of Sickneses,	453	2093	370	1913	3246	1999	2796	3061	6527	734	1884	2462	1944
	No. of Deaths, ...	36	72	33	95	118	18	63	56	134	21	23	63	86
	Percent. of Deaths to Sickneses,...	7.9	3.4	8.9	5.0	3.6	0.9	2.3	1.8	2.1	2.9	1.2	2.6	4.4
Whooping Cough, ...	No. of Sickneses,	669	840	222	1696	507	3645	591	2471	1377	2968	366	1469	989
	No. of Deaths, ...	83	66	34	150	43	129	16	90	50	106	21	71	76
	Percent. of Deaths to Sickneses,	12.4	7.9	14.7	8.8	8.5	3.5	2.7	3.6	3.6	3.6	5.7	4.8	7.7
Totals, .....	No. of Sickneses,	1835	3344	1104	4442	4426	6191	4108	6140	8543	5174	3454	4693	3773
	No. of Deaths, ...	151	166	106	291	191	181	118	196	251	218	94	181	223
	Percent. of Deaths to Sickneses,...	8.3	5.0	9.6	6.6	4.3	2.9	2.9	3.2	2.1	4.2	2.7	3.9	5.9

of last year, when the steam trawler "Machoda" arrived, on the 16th, from Lisbon, with a crew, mainly Portuguese, which had been engaged to bring the boat to Aberdeen, the boat having been purchased in Portugal for Aberdeen owners. For some days before reaching this port one of the Portuguese sailors had been out of sorts, and latterly had developed a rash, but he was able to continue at his work, and the captain of the vessel, influenced by another member of the crew who professed some knowledge of medicine, regarded the illness as due merely to exposure to cold. Accordingly, when the vessel arrived, and the usual inquiry was made by the Customs officers as to whether all were well on board, an affirmative reply was given by the captain, the captain afterwards stating that he meant that all were sufficiently well for work. The vessel was accordingly allowed to be berthed. Soon afterwards, the sick Portuguese became worse, and the captain had him removed by cab to the Royal Infirmary, without previous medical consultation. The patient was at once recognised at the Infirmary to be suffering from small-pox, and was accordingly sent on to the City Hospital. Meanwhile, the other members of the crew had been perambulating the town and making several calls, but steps were immediately taken to have them brought together and revaccinated. As many as could be so persuaded—and these represented the majority of the crew—were detained in the City Hospital during the incubation period of small-pox. Revaccination was also offered to a number of persons who had been in contact with the crew between the time of the arrival of the vessel and the time of the discovery of the case, and was accepted by the bulk of them. The patient suffered from a comparatively mild attack of small-pox, and made an excellent recovery. No other cases followed or occurred during the year.

The captain apparently acted in good faith in making his answer to the Customs officers, but even if he had deliberately misrepresented the condition of his crew, the law, as it stands, apparently has no power for penalising him. Such power exists only in cases where the disease has been scheduled in a special Order by the Local Government Board, under Part IV. of the Public Health (Scotland) Act. The diseases in regard to which such an Order exists at present are cholera, yellow fever, and plague. Small-pox is not included. It is, I think, desirable that power should exist for dealing with masters of vessels who knowingly give wrong information as to illness on board, whatever be the nature of the illness.

*Measles*, after having assumed epidemic dimensions in the preceding year, fell back in the past year to the usual prevalence in non-epidemic years. The case-mortality was high, being 7·9 per cent., but this, no doubt, is apparent only, and is largely due to an inadequate intimation of the cases of sickness. The Department still continues to visit practically all the cases of measles, and to take steps for securing such home isolation as may be practicable. Only a small per-centage of the cases is removed to hospital. The Department seeks especially to impress upon parents the desirability of saving any children under two or three years from becoming infected, as the mortality at these ages is so much higher than at later ages.

*Whooping Cough* was slightly less prevalent last year than in the preceding year, but, judging from the number of deaths, it is doubtful if the diminished prevalence is not more apparent than real. Many of the cases of whooping cough occur among children too young to be at school, and are, therefore, not intimated through the School Attendance Officers. The case-mortality (12·4 per cent.) was very high, but this is probably to be accounted for in



the way just mentioned. This is also a disease from which it is of the greatest importance that young children under two or three years should be saved, for there is no zymotic more fatal to children of tender years.

It is of interest to inquire whether, as the result of the stoppage of compulsory notification of measles and whooping cough early in 1903, there has been an increased mortality from these diseases. During the four years which have elapsed since the end of 1903, 236 deaths from measles have been registered; while, during the four years preceding 1903, 271 deaths were registered, but the latter include an exceptionally heavy prevalence in 1899. As regards whooping cough, the deaths during the four years succeeding 1903 were 333; while, during the four years preceding 1903, the deaths amounted to 285. Probably no safe inference can be drawn from these figures, as the prevalence of these diseases varies so much from year to year; but, on the whole, they indicate no substantial loss from the abolition of compulsory notification.

*Scarlet Fever* increased in prevalence during the past year, so as to raise the number of cases to about the average for the preceding decade. The prevalence had been exceptionally low in each of the preceding two years. The case-mortality was remarkably small during 1907, being only 1 per cent., or the lowest on record. The low case-mortality is being continued into the present year. The disease has now, for some time, been of a very mild type, and it is usual to find that febrile symptoms, and practically all sense of illness, have disappeared in the course of three or four days from the commencement of the rash. Indeed, in many cases, the temperature appears to have risen for only one day. If a case terminates fatally, it is almost always due to previous constitutional weakness or to some pre-existing disease, such as tubercle. It does not follow that scarlet fever patients should receive less attention than formerly, for the patients are still liable during convalescence to the complications which may follow upon even a mild attack of the disease; and it is, therefore, necessary that the patient should be kept indoors and properly nursed until the critical stages are past.

*Diphtheria* declined during the past year, as compared with 1906, but the number of cases was above the average for the preceding ten years. The case-mortality, 9·7 per 1,000, is the highest for five years, but is slightly below the average for the preceding decennium.

It will be recollected that an arrangement was inaugurated by the Public Health Department under which a supply of anti-toxin, together with the necessary sterilised syringe, was supplied gratuitously to medical practitioners for use in any case of diphtheria occurring in their practice. The offer was not taken advantage of so largely during last year as might have been expected, for, although made without restriction as to class of patient, it was utilised in only one of every six cases. Its use in the current year is, however, more extensive. It too frequently happens that a case has not received anti-toxin until after its admission to hospital, and, therefore, usually not until after the first day or two of the disease. As was emphasised in the report for last year, it is chiefly during the first two days that the full benefit of anti-toxin treatment can be attained. I have no hesitation in saying that if anti-toxin were to be more freely used on the first appearance of the illness, the death-rate from diphtheria might be reduced to less than a half of what it was last year. Among our hospital cases, we practically never have the patient dying if treated early.

*Typhoid Fever*.—There was a slight increase of cases from this disease during the year,

but the number was small relatively to the average for the preceding ten years, being 24, as against an average of 80. The slight increase of cases was mainly due to infection conveyed from the epidemic in Peterhead about the middle of the year.

The cases included three of para-typhoid, one of which ended fatally. The three cases occurred in one family in Torry. The blood of each gave a good agglutination reaction with a para-typhoid Bacillus B, which had been isolated by us from similar cases at the end of the preceding year, but it gave only slight reaction with the ordinary typhoid bacillus.

The case-mortality among the typhoidal cases generally was distinctly higher than usual, but it is proper to mention that in two instances, where the patient had been removed to the City Hospital on the certification of the medical attendant, it was exceedingly doubtful whether the cases were really typhoid. On the whole, I was inclined to think they were neither typhoid nor para-typhoid. The case-mortality is, therefore, probably unduly high.

A distinctly fresh interest is being taken throughout the country in typhoid, owing to the discovery of the fact that the disease is often propagated by persons who carry its germs in their body—in the stools and urine—for many years after they have suffered from an attack of the disease. Cases are now on record where a person, such as an infected cook, who has within a few years, in several successive families in which she has been employed, conveyed infection to one or more members in the majority of the families. The discovery of such typhoid carriers affords an explanation of outbreaks of the disease which, hitherto, had baffled investigation. There seems to be a distinct prospect of typhoid being altogether stamped out from the use of methods based on the newer knowledge as to its modes of propagation.

*Typhus Fever.*—No cases of this disease were reported during the year.

*Epidemic Cerebro-Spinal Meningitis.*—Aberdeen suffered much less from epidemic cerebro-spinal meningitis during the year than the other larger towns of Scotland. Excluding suspicious cases, which were afterwards shown by bacteriological examination not to be genuine cases of the disease, only three cases occurred in Aberdeen, all of which terminated fatally. One of the patients was 15 years of age, and the other two were under 6 years. Each case was in a different part of the town from the others, and had no traceable connection with them. The characteristic germ was definitely found in the cerebro-spinal fluid of each of the three cases. In the family of one of the patients, where there were five children with two parents, besides the infected person, two of them—the father and one child—revealed, on bacteriological examination, the presence of the bacillus in their throat, but they never exhibited any symptoms of the disease.

Some foreign authorities have found the bacillus in a large proportion of apparently healthy persons residing in the same house or quarters with an infected person. In military barracks, for example, and even in schools, as many as 20 to 30 per cent. of the healthy persons in an infected barrack-room or school-room have exhibited the germ. The feeling appears to be growing among experts that the germ is widely spread and ordinarily innocuous, except when, through some breach of the tissues, it is able to leave its ordinary habitat in the throat and find its way to the brain and spinal cord. It is frequently found that children who take the disease have previously not been in good health, or have suffered at some time—not very remote—from a fall or accident to the head. This was more or less true of all the cases occurring in this city.

One of the most striking results of bacteriological research in recent years is the discovery of the widespread dissemination in apparently healthy persons of the germs of several important zymotic diseases without any symptom whatever of illness. This, as I have just remarked, is true of epidemic cerebro-spinal meningitis. It is also true of diphtheria and of pneumonia, and, in a more restricted sense, it is true likewise of typhoid fever.

Such discoveries as these tend to give fresh importance, in the prevention of the spread of infection, to increasing the vital resistance of the individual by the steady prosecution of measures for the improvement of his general health, as compared with methods directed merely towards the extinction of the infecting agent.

During the year, cerebro-spinal fever was added by the Town Council of Aberdeen to the list of diseases notifiable under the Infectious Diseases (Notification) Act, 1889. The addition was at first made temporarily for one year, but after the close of this period, within the current year, the disease was added permanently to the list by a fresh Order, which received the approval of the Local Government Board.

#### TUBERCULOUS DISEASES.

*(Table IX.)*

The deaths from phthisis last year amounted to 191, or 21 fewer than in the preceding year, and 20 fewer than the average for the preceding five years. The deaths from other forms of tuberculous disease were 114, or 2 under the number for the preceding year, and was exactly equal to the average for the preceding five years. The reduction is satisfactory, as it indicates a renewal of the rapid declension in this city of deaths from tuberculosis, which was temporarily interrupted by a slight rise in the preceding year. As already observed, the death-rate from phthisis for the past year is the lowest on record, and is one of the lowest for this disease among the large towns in the Kingdom. The fall is especially pronounced at the "adolescent" age-period (15-25 years), where the deaths have declined from an average of 82 in 1897-1901 to 57 last year. There has also been a considerable fall at the "mature" age-period. At the "post-mature" period, the decline proportionately is large, but the number of deaths is always few. At the "school" period, the number of deaths from tuberculous disease is practically stationary, and at the "infant" period there is a slight increase.

A large number of cases of phthisis among the poorer classes was visited during the year in connection with a special inquiry, and the opportunity was taken to give advice in hygienic precautions.

Disinfection of room, bedding, and clothing was, as usual, offered in every case of death from phthisis, and was taken advantage of in between eight and nine-tenths of the cases.

A special report is being prepared on tuberculous disease in the city, and will be separately presented to the Local Authority.

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TABLE IX.—DEATHS AT VARIOUS AGE-PERIODS FROM TUBERCULOUS DISEASES  
IN YEAR 1907, WITH AVERAGE FOR PRECEDING TWO QUINQUENNA.

*Compared with Deaths from Miasmatic Diseases and from All Causes.*

	Year.	Number of Deaths.					Number of Deaths from Tuberculous Diseases in every 100 Deaths from All Causes.
		Phthisis.	Other Tuberculous Diseases.	ALL TUBERCULOUS DISEASES.	ALL MIASMATIC DISEASES.	ALL CAUSES.	
ALL AGES, . . .	1907 Av.	191	114	305	176	2474	12.3
	1902-1906	211	114	325	217	2699	12.0
	1897-1901	225	115	340	225	2711	12.5
Infant Period, . . . 0—5 Years, . . .	1907 Av.	7	72	79	132	817	9.7
	1902-1906	8	63	71	170	957	7.4
	1897-1901	5	69	74	150	993	7.5
School Period, . . . 5—15 Years, . . .	1907 Av.	17	20	37	13	99	37.4
	1902-1906	15	23	38	11	103	36.9
	1897-1901	16	20	36	17	109	33.0
Adolescent Period, . . . 15—25 Years, . . .	1907 Av.	48	9	57	5	107	53.3
	1902-1906	57	11	68	5	140	48.6
	1897-1901	69	13	82	10	159	51.6
Mature Period, . . . 25—60 Years, . . .	1907 Av.	112	13	125	9	614	20.4
	1902-1906	123	15	138	14	659	20.9
	1897-1901	123	12	135	23	661	20.4
Post-Mature Period, . . . 60 + Years, . . .	1907 Av.	7	0	7	17	837	0.8
	1902-1906	8	1	9	17	839	1.1
	1897-1901	13	1	14	25	789	1.8



## BACTERIOLOGICAL EXAMINATIONS.

(Table X.)

In Table X. is given a summary of the bacteriological examinations made in the Bacteriological Department of the University by Professor Hamilton and his special assistant, Dr. Laing, under the agreement with the Town Council.

During the year, 626 examinations were made of material from cases of disease, exclusive of a few examinations in connection with meat inspection. The number shows a slight decrease as compared with that of the preceding year. The examinations made for typhoid fever included, in several instances, the examination of the stools and urine for the typhoid germ, as well as the Widal reaction. On the whole, the medical practitioners of the city continue to take considerable advantage of the facilities provided in the bacteriological laboratory, but, as has been remarked in former reports, there are still a few who rarely utilise them. Every encouragement continues to be given to practitioners to have bacteriological examinations made in cases where they may be of value in determining the diagnosis.

TABLE X.—BACTERIOLOGICAL EXAMINATIONS,

*made by Professor Hamilton, University of Aberdeen, under agreement with the Town Council.*

YEAR.	SUSPECTED DISEASES.																	OTHER DISEASES.	GRAND TOTAL.
	TYPHUS FEVER.				TYPHOID FEVER.				DIPHTHERIA.				TUBERCULOSIS.						
	Posi- tive.	Nega- tive.	Doubt- ful.	Total.	Posi- tive.	Nega- tive.	Doubt- ful.	Total.	Posi- tive.	Nega- tive.	Doubt- ful.	Total.	Posi- tive.	Nega- tive.	Doubt- ful.	Total.			
1907	...	...	...	...	10	98	0	108	81	181	0	262	60	186	0	246	10	626	
1906	...	..	...	...	7	80	0	87	144	195	0	339	84	178	0	262	3	691	
1905	93	214	0	307	8	76	0	84	104	124	0	228	83	182	0	265	1	885	
1904	...	...	...	...	17	95	0	112	160	162	0	322	83	154	0	237	7	678	
1903	...	...	...	...	24	105	1	130	180	150	0	330	60	95	0	155	4	619	
1902	...	...	...	...	31	79	1	111	162	131	3	296	67	128	0	195	3	605	
1901	...	..	...	...	139	58	2	199	104	172	7	283	61	81	0	142	9	633	
1900	...	...	...	...	108	48	6	162	74	95	4	173	37	64	0	101	4	440	
1899	...	...	...	...	152	37	6	195	92	127	13	232	32	52	0	84	3	514	

It is apparent that the bacteriological work associated with a public health department is not unlikely to increase considerably in future, as, for example, in regard to the diagnosis of cases of typhoid and typhoid-carriers. The Widal test is no longer sufficient, and direct examination of the blood for the typhoid organism, and of the stools or urine, is required not only for an early diagnosis of a case, but also to determine when the case becomes free from infection. Judging from the recent experience of some observers, it would appear to be almost incumbent upon a Local Authority, before discharging a typhoid case from hospital or releasing it from home isolation, to have repeated examinations made of the

excreta, so as to make certain, if possible, that the patient is bacillus-free. Fortunately, Aberdeen has for some years suffered very little from typhoid fever, but for that reason it may be the more necessary, as it is the more practicable, to exercise all bacteriological precautions in regard to every case. Tuberculosis is also a disease in regard to which more examinations may be expected to be made in future than have been made in the past. These are comparatively simple when unaccompanied by inoculations, but inoculations are necessary to exact results. It is desirable to extend greatly the bacteriological examination of milk, especially for tubercle.

In view of fresh developments in bacteriology as applied to administrative hygiene, it is a question whether the Town Council might not arrange with the other contributing bodies to the present scheme to provide a laboratory of their own. It would, no doubt, be somewhat more costly than the present arrangement, but it would be more easy to arrange for certain bacteriological inquiries that suggest themselves in the city or in the county from time to time. The matter will, in any case, come up for fresh consideration on account of the lamented retirement through illness of Professor Hamilton from his post as Professor of Pathology and Bacteriology in the University.

#### COMPARISON WITH OTHER TOWNS.

*(Tables XI. and XII.)*

Two Tables (XI. and XII.) are submitted in which a comparison is made between Aberdeen and other large towns in Scotland, as also All Scotland, in regard to some of the more important features of the vital statistics. For the information contained in the tables, I am mainly indebted to the report of the Local Government Board.

The figures given have, in every instance, been corrected for transferred deaths, that is, for deaths transferred from the public health records in the places of their occurrence to the records of those places in which the persons have their home residence. This correction is necessary before any proper comparison can be made, especially when it is kept in view that, as with Aberdeen, there are many towns containing large hospitals and nursing homes in which patients from surrounding districts are treated, and, also, that several of these towns have now some of their own charitable institutions, such as poorhouses and asylums, situated outside the municipal boundary. But while such corrections have been made for all the towns referred to in the tables, it is proper to mention that, in each case, the population on which the several rates have been estimated is the population as calculated by the Registrar-General from the two last censuses. In most of the towns compared, the growth since the last census has probably, as in Aberdeen, been greatly under the calculated ratio. The various rates given in the tables are, therefore, probably too low, but they are fairly comparable between themselves. If any town suffers unduly by the comparison, it is probably Dundee, the estimated population of which should more nearly agree with the real population, as it is calculated on an exceptionally small ratio of increase between the censuses.

There is another correction of rates which is frequently made, namely, the correction for age and sex distribution. The Registrar-General has recently begun to make these corrections in his annual reports. The correction is rendered necessary by the fact that the distribution of age and sex is not equal over all the towns, and that a larger proportion in

a town of persons at an age such as the "infant" age, where the mortality is normally high, would raise the total mortality of the town in comparison with another town of equal healthiness, but with a smaller proportion of infants. The same is true also of inequality in sex distribution, on account of the mortality among females being usually slightly less than among males. Aberdeen is so constituted, in respect of age and sex distribution, that the crude, or uncorrected, death-rate is slightly higher than the corrected rate; while, for each of the other principal towns, the reverse is true. For comparison, the corrected rates are given immediately below the crude rates.

TABLE XI.—BIRTH, DEATH, AND MARRIAGE RATES DURING THE YEAR 1907.  
Eight Principal Towns in Scotland.

	Glas- gow.	Edin- burgh.	Dundee.	Aber- deen.	Paisley.	Leith.	Green- ock.	Perth.	All Scot- land.
Estimated population ..... (in thousands).	848	346	166	175	89	84	71	35	4766
Marriage-Rate ..... (per 10,000 of population).	92	89	82	84	80	65	69	82	85
Birth-Rate ..... (per 10,000 of population).	282·3	216·9	274·0	257·9	262·0	277·2	302·0	226·2	271·0
*Death-Rate— A—All ages. (per 10,000 of population).									
(a) All causes, .....	179·6	144·9	191·7	141·7	160·0	178·1	189·4	168·9	158·8
Corrected for Age and Sex Distribution...	198·9	150·9	202·0	140·7	167·4	189·2	199·0	169·5	158·8
(b) Seven chief Zymotics,	26·3	13·0	18·5	9·0	17·4	20·9	15·0	10·6	13·4
(c) Pulmonary Phthisis,...	15·6	11·5	18·5	11·0	12·5	14·6	19·1	14·3	12·8
(d) Other Tub. Diseases,	10·0	6·5	10·7	6·5	8·6	6·1	11·9	6·0	7·6
(e) Pneumonia, .....	18·6	13·4	15·6	11·2	12·3	16·4	16·8	5·2	10·9
(f) Malignant Diseases (chiefly Cancer), .....	7·2	10·0	9·5	10·4	7·8	8·9	11·5	9·8	8·7
Diseases of :—									
(g) Respiratory System (excluding Phthisis and Pneumonia), .....	15·3	9·4	18·3	12·9	18·3	13·6	16·1	22·1	14·8
(h) Nervous and Circula- tory Systems, .....	32·2	33·8	43·1	35·3	35·6	49·7	45·6	39·3	36·2
B—Infants under 1 year ..... (per 1000 births).	129	121	148	125	121	131	108	109	109

\*The Death-Rate in each case has been calculated upon the population as estimated by the Registrar-General, and has been adjusted for "transferred" deaths.

Table XI. shows that Aberdeen had, during the year, the third lowest *birth-rate* (257·9 per 10,000 of population) among the eight principal towns—Edinburgh, with 216·9, and Perth, with 226·2, being lower. The town with the highest birth-rate was Greenock, with 302·0.

In respect of the *marriage-rate*, Aberdeen occupied the third highest place, with a rate of 84 per 10,000 of the population—Glasgow, with 92, and Edinburgh, with 89, being higher. The lowest rate was in Leith, with 65.

As regards the *death-rate* from all causes and at all ages, Aberdeen had the lowest rate (141·7 per 10,000). The next lowest rate was in Edinburgh, with 144·9. Paisley came next, with 160·0; while the town with the highest rate was Dundee, with 191·7. The satisfactory position of Aberdeen in regard to its death-rate from all causes is emphasised by the correction of the rates for age and sex constitution. The rate for Aberdeen, when thus corrected, stands at 140·7; while the rate for Edinburgh, the next lowest, becomes 150·9.

In regard to *infantile mortality*, or deaths of infants under one year per 1,000 births, Aberdeen had the fifth lowest rate (125)—Greenock, with 108; Perth, with 109; and Edinburgh and Paisley, each with 121, being lower; while Dundee had the highest rate, 148.

The low total death-rate in Aberdeen was helped by the low *mortality from zymotic disease*, the rate from the seven chief zymotics being only 9·0, and the lowest among the towns compared.

It is especially interesting to observe that the death-rate from *pulmonary phthisis* in Aberdeen (11·0 per 10,000 of population) was also the lowest—Edinburgh coming next, with 11·5; while the rate rose to as much as 18·5 in Dundee, and 19·1 in Greenock. The death-rate from *other tuberculous diseases* in Aberdeen (6·5) was the same as in Edinburgh, but slightly higher than in Leith (6·1) and Perth (6·0).

The death-rate from *pneumonia* was also low, although not so low as that of Perth.

The death-rate from *cancer* was, unfortunately, one of the highest, being 10·4, and compares unfavourably with the low rate of 7·2 in Glasgow, which was, however, the lowest in any of the towns.

The death-rate from *lung diseases*, excluding phthisis and pneumonia, was the second lowest, Edinburgh being lower. It is interesting to note that, of all the towns, the two most exposed to east winds had the lowest mortality from lung diseases, while the most sheltered of all the towns—Perth—had the highest; but there are other important factors besides chilling winds in producing lung illnesses.

In the next table (Table XII.) a comparison is made between the four chief towns, in respect of three of the more important zymotics.

The table shows that the prevalence of *diphtheria* and *typhoid fever* was relatively low in Aberdeen during the year, and that the case-mortality of *scarlet fever* was less than a half of that of the other towns. On the other hand, the case-mortality from *typhoid fever* was higher, but, as remarked in an earlier part of the report, two of the deaths registered as due to typhoid were of an almost more than doubtful character.

It will further be observed that the per-centage of cases of these three diseases in Aberdeen removed to hospital was among the highest for the four towns, and approximated to 90 per cent. for each of the three diseases. In Dundee, a much smaller proportion seems to be isolated in hospital than in any of the other three cities.

## XII.—DIPHTHERIA, SCARLET FEVER, AND TYPHOID FEVER IN 1907.

## FOUR PRINCIPAL TOWNS IN SCOTLAND.

*(Corrected for transferred deaths.)*

CITY.	Estimated Popula- tion in Thousands	TOTAL NUMBER OF CASES.			NUMBER OF CASES PER 10,000 OF POPULATION.			NUMBER OF DEATHS PER 100 CASES.			PERCENTAGE OF CASES TREATED IN HOSPITAL.			NUMBER OF DEATHS PER 10,000 OF POPULATION.		
		Diph- theria.	Scarlet Fever.	Typhoid Fever.	Diph- theria.	Scarlet Fever.	Typhoid Fever.	Diph- theria.	Scarlet Fever.	Typhoid Fever.	Diph- theria.	Scarlet Fever.	Typhoid Fever.	Diph- theria.	Scarlet Fever.	Typhoid Fever.
Aberdeen,	175	196	492	24	11	28	1.4	9.7	1.0	29.2	89	91	92	1.1	0.3	0.4
Glasgow, . . .	848	1,158	1,759	470	14	21	5.5	10.9	2.5	19.6	85	89	92	1.5	0.5	1.1
Edinburgh, . . .	346	615	1,110	103	18	32	3.0	5.2	2.2	10.7	83	92	88	0.9	0.7	0.3
Dundee, . . .	166	169	497	48	10	30	2.9	17.8	2.2	12.5	45	35	67	1.8	0.7	0.4
All Scotland, . . .	4,767	6,513	11,284	2,651	14	24	5.6	10.0	2.1	13.4	65	75	76	1.4	0.5	0.7



### HOUSING OF THE WORKING CLASSES.

No houses were closed during the year, either under the Housing of the Working Classes Act or under the Aberdeen Corporation Act, 1881. Probably part of the recent improvement in the general health of the city is to be attributed to the large clearances of old and lower-class property which have been effected in recent years in the centre of the city, especially in the Gallowgate and in the vicinity of Marischal College. Comparatively few houses of a similar character now remain, apart from such streets as Guestrow and Shuttle Lane, but the houses in these streets are, on the whole, somewhat better than those demolished. Owing to the extent of recent clearances, it has been found advisable not to push too actively in the meantime for further demolitions, so as not to restrict too greatly the cheaper house accommodation for the poorest of the working classes. At the same time, care is being taken by the Sanitary Inspector that all these older properties are maintained, in respect of drainage and the like, in a satisfactory condition.

One large derelict property in Old Aberdeen, which had not been inhabited for some years, was complained of by an adjoining proprietor, and was reported on by the Sanitary Inspector and myself; but we were not able to recommend to the Public Health Committee that the property sufficiently interfered with the healthiness of adjacent properties as to warrant its demolition.

It is distinctly unsatisfactory that the houses in the Fishers' Squares at Footdee, to which reference has frequently been made in these reports, are still without an adequate supply of water-closet accommodation. Plans were submitted last year for the supply of several closets, but only two have thus far been erected. This is, of course, quite inadequate. There is no part of the city in which a similar want of such accommodation exists, and the danger might be very real if typhoid became epidemic in Aberdeen, or if such a disease as cholera reached our shores; for, where there is no proper closet accommodation, deposits of excrement are always found in the vicinity of the houses. The germs of the diseases named exist abundantly in excreta, and may be carried on the feet of flies to the food in adjacent houses, or the dried excrement may be converted into dust and be carried by winds.

The peculiarity of the houses in Fishers' Squares, as has been formerly reported, is that they mostly belong to the occupants, who are mainly small fishermen without sufficient means to provide the required sanitary conveniences. They present an interesting illustration of how working class ownership of houses, although apparently a thing to be desired and recommended, may seriously retard necessary sanitary improvements.

The Corporation Lodging-House continues to fill an important place in the housing of the working classes, although, for last financial year, there was a loss of fully £500 on the year's accounts. The loss, the largeness of which was exceptional, was partly due to a diminished number of lodgers, and partly to an increase in expenditure in connection, especially, with repainting and some necessary repairs.

## WORKSHOPS.

*(Table XIII.)*

The number of workshops registered at the end of the year was 1,071, as against 1,088 at the end of the preceding year. There was thus a reduction of 17 in the workshops in the city. The reduction is a reflection of the industrial depression during the year—a depression which has not yet begun to be removed.

The following tabular summary of the work done during the year by the Sanitary Staff, in the inspection and regulation of factories and workshops, has been prepared in accordance with the requirements of the Home Secretary. It ought to be noted that, in the list of workshops, the numbers relate to workshops solely, as legally defined in the Factories and Workshops Acts, and do not include factories. For example, the number of bakehouses on the list is stated as 25, but the total number of bakehouses in the city, including those which, on account of employing motive power, are termed factories, was 56.

Much valuable work continues to be done by the Sanitary Inspector and his staff in the sanitary control of the workshops in the city. They are, on the whole, in good condition, and are well supplied with sanitary conveniences and with means of ventilation.

It is the constant aim of the Department to see that all the workshops are well lighted from natural sources, and well ventilated. Employers and workers are gradually realising the advantages of a fuller use of the means of ventilation, but a traditional dread of draughts still exists in many places, especially where women are employed, and some years will still be required to bring about an appreciation of the value of a good supply of fresh air in every workshop, whatever be the nature of the work carried on in it and the condition of the occupants.

Recently, with the approval of the Town Council, notices have been supplied to all workshops and factories in the city in regard to the danger of spitting, and employers have been appealed to in a circular letter from the Department to give what help they can in enforcing the notices. It is hoped that this notice may assist in diminishing the danger of tuberculous infection from sputum. No objection has been raised anywhere to the erection of these notices in workshops.

*Bakehouses.*—The bakehouses were, as usual, inspected every quarter during the year, and were found, as a rule, to be in a satisfactory condition, although there is still room, as has been stated frequently before, for the maintenance of a higher standard of cleanliness in some of the smaller bakehouses, especially in regard to floors and walls. Several notices for the limewashing and painting of bakehouses were issued during the year by the Sanitary Inspector, as also some notices for the cleaning of the floors and the repair of walls and ceilings, and also the limewashing of water-closets in connection with the bakehouses. Five bakehouses were closed during the year, while three were added.

No plans were submitted during the year for new bakehouses or the enlargement of existing ones, except one plan for the addition of sanitary conveniences in connection with one of the larger bakehouses in the city. The three bakehouses added to the register during the year were very small and in existing buildings, and did not involve any structural alterations.

TABLE XIII.—FACTORIES, WORKSHOPS, LAUNDRIES, WORKPLACES, AND HOMEWORK.

## 1.—INSPECTION.

*Including Inspections made by Sanitary Inspectors.*

Premises.	No. of Inspections.	No. of Written Notices.	No. of Prosecutions.
Factories (including Factory Laundries), . . .	185	78	—
Workshops (including Workshop Laundries), . .	1,615	330	—
Workplaces (other than Outworkers' premises in- cluded in Part 3 of this Report), . . .	132	7	—
Total, . . . . .	1,932	415	—

## 2.—DEFECTS FOUND.

Particulars.	Number of Defects.			Number of Prosecutions.
	Found.	Remedied.	Referred to H. M. Inspector.	
<i>Nuisances under the Public Health Acts:—*</i>				
Want of cleanliness, . . . . .	208	213	—	—
Want of ventilation, . . . . .	2	5	—	—
Overcrowding, . . . . .	4	4	—	—
Want of drainage of floors, . . . . .	5	4	—	—
Other nuisances, . . . . .	65	66	—	—
Sanitary accommodation	{ insufficient, . . . . .	3	8	—
	{ unsuitable or defective, . . . . .	17	18	—
	{ not separate for sexes, . . . . .	—	—	—
<i>Offences under the Factory and Workshop Act:—</i>				
Illegal occupation of underground bakehouse (S. 101), . . . . .	—	—	—	—
Breach of special sanitary requirements for bake- houses (SS. 97 to 100), . . . . .	92	96	—	—
Other offences (excluding offences relating to outwork which are included in Part 3 of this Report), . . . . .	15	8	—	—
Total, . . . . .	411	422	—	—

\* Including those specified in sections 2, 3, 7, and 8, of the Factory and Workshop Act as remediable under the Public Health Acts



OUTWORKERS' LISTS, SECTION 107.																							
NATURE OF WORK.*	Lists received from Employers.							Addresses of Outworkers.			Prosecutions.		OUTWORK IN UNWHOLE-SOME PREMISES, SECTION 108.			OUTWORK IN INFECTED PREMISES, SECTIONS 109, 110.							
	Twice in the year.			Once in the year.				Received from other Councils.			Forwarded to other Councils.			Failing to keep or permit inspection of lists.		Failing to send lists.		Instances.	Notices served.	Prosecutions.	Instances.	Orders made (Section 110).	Prosecutions (Sections 109, 110).
	Lists. †	Con-tractors	Work-men.	Lists.	Con-tractors	Work-men.																	
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)						
Wearing apparel— (1) making, &c., (2) cleaning and washing, Lace, lace curtains, and nets, Artificial flowers, Nets, other than wire nets, Tents, Sacks, Furniture and upholstery, Fur pulling, Feather sorting, Umbrellas, &c., Carding, &c., of buttons, &c., Paper bags and boxes, Basket making, Brush making, Racquet and tennis balls, Stuffed toys, File making, Electro-plate, Cables and chains, Anchors and grapnels, Cart gear, Locks, latches, and keys, Pea picking, TOTAL, . . .	10 —																						

\* If an occupier gives out work of more than one of the classes specified in column 1, and subdivides his list, in such a way as to show the number of workers in each class of work, the list should be included among those in column 2 (or 5 as the case may be) against the principal class only, but the outworkers should be assigned in columns 3 and 4 (or 6 and 7) into their respective classes. A footnote should be added to show that this has been done.

† The figures required in columns 2, 3, and 4 are the total number of lists received from employers who sent them both in February and August as required by the Act) and of the entries of names of outworkers in those lists. They will, therefore, usually be double of the number of such employers and (approximately) double of the number of individual outworkers whose names are given, since in the February and August lists of the same employer the same outworker's name will often be repeated.

## 4.—REGISTERED WORKSHOPS.

*Workshops on the Register (S. 131) at the end of 1907:—*

	Number.		Number.
Bakehouses, . . . . .	25	Plumbers, . . . . .	32
Blacksmiths, . . . . .	31	Stonecutters, . . . . .	30
Bootmakers, . . . . .	98	Watchmakers and Jewellers, . . . . .	38
Fish Curers and Fish Packers, . . . . .	129	Wearing Apparel, Makers of, . . . . .	288
Furniture, makers of . . . . .	61	Other Workshops, , . . . . .	256
Joiners, . . . . .	36		
Painters, . . . . .	47	Total No. of Workshops on Register, 1,071	

## 5.—OTHER MATTERS.

*Matters notified to H.M. Inspector of Factories:—*

	Number.
Failure to affix Abstract of the Factory and Workshop Act (S. 133), . . . . .	—
Action taken in matters referred by H.M. Inspector as remediable under the Public Health Acts, but not under the Factory and Workshop Act (S. 5),	Notified by H.M. Inspector, . . . . . 3 Reports (of action taken) sent to H.M. Inspector, . . . . . 3
Other, . . . . .	
	35

*Underground Bakehouses (S. 101):—*

Certificates granted during the year, . . . . .	—
In use at the end of the year, . . . . .	10

*Dairies.*—The dairies have been regularly inspected, both by the Dairy Inspector and the Veterinary Inspector. In such visits as I have had occasion to make to them during the year, I was glad to find that the steady enforcement of the bye-laws is, with few exceptions, producing good effects in the greater cleanliness of cows and in the precautions taken to prevent contamination of the milk.

The question of a pure milk supply for the city is one, it need scarcely be said, of very great importance for every member of the community, and it is greatly to be desired that, either through fresh legislation or by some concerted action between the county and the municipal authorities, there could be reasonable assurance that the whole of the supply of the city, from whatever district it might come, was produced under the best hygienic conditions, and that every dairy was subject to both sanitary and veterinary inspection. Perhaps it may be possible to take some practical steps in this direction in the course of the forthcoming year, as there is evidently a disposition on the part of the authorities of the country districts to give all reasonable help in bringing their dairy farms into the best possible condition.

## INSPECTION OF PLANS.

As usual, a considerable number of plans—chiefly of factories and workshops, and especially those in which foodstuffs are prepared, or in which there is any apprehension of nuisance—were examined and reported on by the Sanitary Inspector and myself. Thus

plans for 20 buildings were dealt with, 12 of which related to the construction or enlargement of fishcuring works. One of the plans related to the reconstruction of the North Lodge Industrial School for the purposes of a common lodging-house. In the previous year, the number of plans examined was 12. Several recommendations in regard to improvements in lighting and ventilation, paving of floors, and the provision of sufficient sanitary conveniences were approved by the Town Council, and given effect to.

It is satisfactory to find that the plans of workshops in more recent years are providing for larger means of lighting than formerly. Good lighting makes both for cleanliness and for better work, and is also an important factor in the preservation of the health of the workers; and provision for it adds little to the expense of the buildings.

### OFFENSIVE TRADES.

The offensive trades in Aberdeen within the meaning of the Public Health Act are concerned chiefly with tallow-melting or oil-extracting (from ox bones or fish livers), soap-boiling, slaughtering, knackering, hide-factoring, and the manufacturing of manures, including fish manure.

In the last year or two the material formerly wholly sold and used as fish manure, and prepared by the drying of fish or fish offal within steam-jacketed cylinders, has, in its better qualities, begun to find a market, especially abroad, for the feeding of animals. The price is considerably higher when the product is sold for this purpose, and there is, accordingly, a stronger inducement than formerly to manufacturers to extend existing businesses for preparing such products, and to others to commence such businesses. As there is no tangible difference between the methods in use for the manufacture of fish manure and those employed in the production of fish meal, and, as they appear to be equally liable to be attended by nuisance, the Town Council, following the example of Montrose, has recently, with the approval of the Local Government Board, added the manufacture of fish meal to the list of offensive trades enumerated in the Public Health Act. Certain cases arising out of this step have recently been receiving a considerable share of the attention of the Public Health Committee and the Town Council, but their history belongs to the report for the current year.

Meanwhile it may not be out of place to express the hope, in the interests of the city, which enjoys considerable residential amenities, that, whatever may be the outcome of the present proceedings, businesses will not be established within the more populous parts of the city that may, although only intermittently, pollute the atmosphere and create a nuisance. If, in the interests of the fishing industry, which is admittedly one of great importance for the city, it is now necessary that the manufacture of fish manure and fish meal should be carried on more extensively within the town or its immediate vicinity than it has been hitherto, we venture to suggest an attempt at co-operation between those desiring to enter on such a business, so that the whole or greater part of the work might be carried on within one sufficiently large and well-constructed building, supplied with every means for the prevention or deodorisation of effluvia, and so situated as to cause the least possible nuisance to the inhabitants of the city. A precedent for such a suggestion is found in a public slaughter-house, within which the whole slaughtering for a large community is conducted

under the best conditions and constant supervision. It is so much more easy to make sure of one or two large manufactories being well appointed and well conducted than several small ones. It would be a pity if, while many other towns are busy with efforts to purify their atmosphere, the air of Aberdeen should be allowed further to deteriorate.

It may be practicable to devise methods for making fish manure and fish meal that may be free from offensive effluvia. In such case no objection could be offered to the establishment anywhere of a business employing such methods. Meanwhile all manufactories of fish manure known to us have been the subject, at times, of serious complaint because of offensive odours, which, unfortunately, have great carrying power.

During the year, three applications for the extension of existing premises in which offensive trades were being carried on were dealt with. In each case, the trade was that of the manufacture of manures, chiefly phosphatic, and not attended with nuisance outside the premises. All three applications were granted by the Town Council on the recommendation of the Sanitary Inspector and myself. There were two applications for the sanction of an offensive trade in new premises—in the one case, for a slaughter-house and tallow-melting, and, in the other, for hide-factoring and tallow-melting—but both were due to the transference of old-established businesses in Wales Street to a fresh site in Hutcheon Street. Both were sanctioned by the Council after revision of the plans by the Sanitary Inspector and myself.

*Slaughter-houses.*—The most important event in the history of slaughter-houses in this city for many years was the resolution, last year, by the Aberdeen Fleshers' Incorporation to close their large slaughter-house in Wales Street, and to transfer the whole business to new buildings on an enlarged site in Hutcheon Street. Part of the new site has been occupied for many years as a slaughter-house of considerable size, but of antiquated and almost dilapidated construction. This slaughter-house has now been removed, and the business formerly carried on in it will be absorbed in the larger premises of the new slaughter-house of the Incorporation. The new buildings are nearing completion, and it is expected that they may be open for occupation by the middle of next year. A large hide-factoring business, which had its premises immediately adjacent to those of the Fleshers' Incorporation in Wales Street, is also being transferred to a site immediately alongside that of the new slaughter-house. As the largest dead meat market in the city immediately adjoins the new slaughter-house, there will thus be concentrated in one place the great bulk of the slaughtering and meat trade.

The various new premises are of a perfectly modern type, and the slaughter-house itself in its construction is not distinguishable from a public slaughter-house. The Incorporation intends to offer every facility for proper inspection, and is providing at its own cost a meat inspector's office, as well as stores for condemned carcasses and means for destroying such carcasses. The slaughter-house will, indeed, become a quasi-public slaughter-house, except that it will be owned and managed by the Incorporation. It contains 27 separate killing booths (including two double ones), each with a cooling-room isolated from the booth by the width of an open cartway. There is also extensive lairage for animals, and suitable rooms are provided for the collection of offal and blood. As the Incorporation is one of the ancient Guilds of the city, and is not itself actually engaged in the business of slaughtering, the whole of its booths will be let to tenants, so that the slaughter-house will, it is understood, be available for any person engaged in the trade on payment of the necessary rent or fees.



The site, perhaps, is not an ideal one for a large slaughter-house, being surrounded on almost all sides by dwelling-houses, but the people in the vicinity have been long accustomed to the existence of a slaughter-house in their midst, and it is not inconveniently situated for access from the auction marts for cattle.

During the year, the two small slaughter-houses in Woodside, referred to in the report for the preceding year as not having been reconstructed in conformity with the new bye-laws, remained unaltered; but one of them has, during the current year, been so reconstructed, and licensed by the Town Council, while the reconstruction of the other is in progress. Accordingly, when the new slaughter-house in Hutcheon Street is completed, and the Wales Street slaughter-house closed, the whole of the slaughter-houses in Aberdeen, of which there will then be 7, will have been brought into full compliance with the bye-laws for slaughter-houses.

During the past year the Medical Inspector of the Local Government Board made an extensive inquiry into the provision of public slaughter-houses in Scotland, and in his subsequent report to the Board he noted, with obvious disappointment, that Aberdeen was the only large town in Scotland in which a public slaughter-house had not been erected, and he further referred to the difficulty in securing proper meat inspection when the animals were being slaughtered in various slaughter-houses situated in different parts of the city. The Sanitary Inspector and myself have, as is well-known to the Council, frequently urged the need for a public slaughter-house, and similar views were strongly held by many members of the Council. But some circumstances peculiar to Aberdeen, as well as the usual difficulty of a suitable site, have hitherto stood in the way. It is hoped that the new slaughter-house of the Fleshers' Incorporation will largely take the place of a public slaughter-house. If the inspection, however, is to be carried on with the same completeness as it is, elsewhere, in large public slaughter-houses, it will be necessary that an additional meat inspector should be appointed, who would devote his whole time to the Incorporation's slaughter-house and the immediately adjacent meat markets.

#### WATER SUPPLY.

At the request of the Water Committee of the Town Council, a monthly report was obtained from Professor Hamilton and myself of a weekly chemical and bacteriological examination of the water supply of the city, as sampled from a tap in the Pathological Department of Marischal College. After the close of the year, a joint report was prepared by us in the following terms:—

“ The analyses show, as was already well known, that the water contains a remarkably small proportion of saline matter, and is in that respect much above the usual standard of water supplies. But the proportion of saline matter, so long as it is not in great excess, is usually no criterion of the potable quality of a water. It may be remarked, however, that the water supply of the city exhibited a somewhat curious increase of chlorides during the first three months of 1907, the chlorides increasing to nearly double their usual amount. It was apparently not due to sewage pollution, for a sample of water from the Dee above Braemar gave also an increase of chlorides, although not quite so large as in the water supplied within the city.



"The amount of 'free ammonia' and of 'albuminoid ammonia,' both of which constituents afford some indication of the proportion of organic matter actually or recently present in the water, was usually within the recognised limits for a potable river water, but on some occasions the limit for albuminoid ammonia was exceeded. The same remark is true of the proportion of 'oxidised nitrogen' and 'oxygen consumed.' There were thus indications that, at times, the organic matter in the water was greater than what is desirable in a good water.

"As regards the bacteriological examination, the results were more decisive, especially in reference to the *Bacillus Coli*. The number of germs or germ-colonies growing at 20 deg. C. (68 deg. F.) varied from 90 to 2,770 in 1 c.c. (15 drops) of the water, but both these figures were exceptional—the usual range being from about 200 to 700. The maximum limit for a good river water is usually stated at 500. The number of germs growing at the temperature of the human body (37 deg. C. or 98·6 deg. F.) varied from 2 to 58, but was seldom above 20. The maximum limit for a good river water is put at 50. Judged by the standards given, the water was, therefore, usually within the recognised limits in respect of the so-called germ-counts, although it occasionally considerably exceeded these limits, especially after heavy winter rains.

"The *Bacillus Coli* has a special interest, as it is believed, when met with in water, to have proceeded exclusively from animal excreta. It is, however, present in the excreta of all animals, even fish and birds. It occurs abundantly in human excreta. Practically all natural and unfiltered waters contain this micro-organism. The only exceptions are spring and deep-well waters. The prevalence of this micro-organism in a water is usually estimated, not by counting the number of the germs in a given quantity of water, but by ascertaining the smallest quantity of water that will by certain cultural reactions reveal the presence of the germ. Thus examined, a really first-rate water should not give evidence of the *Bacillus Coli* in 100 c.c. of water. But there are few, if any, unfiltered river waters that attain so high a standard. A river water is usually held to be satisfactory, in so far as concerns this test, if 10 c.c. fail to give the reactions for the bacillus. The Aberdeen water was almost always considerably under this standard. On many occasions the bacillus was readily detected in as little as 1 c.c. of the water. There can be no doubt that the river suffers from considerable excremental pollution, and from a much greater amount than could be accounted for by fish and birds. Much of this pollution is probably due to surface drainage from grazing lands occupied by cattle or sheep, and to cultivated land that has been recently manured. But part of the pollution is almost certainly due to domestic sewage. The river, for many miles above the intake of the town's supply at Invercannie, runs through land used for agricultural or grazing purposes, and several villages and numerous isolated houses exist within the watershed.

"The *Bacillus Coli* in water is not especially dangerous in itself, if not present in great excess, but, in so far as it may be of human origin, it may be accompanied at any time by highly dangerous organisms, such as those of typhoid fever or cholera. Experience elsewhere has repeatedly shown that a community may have continued for years to drink with apparent impunity water subject to domestic contamination, when, with explosive suddenness, a serious epidemic of cholera or typhoid arises from the entrance of the special bacilli.

"We may remind the Committee that, at their request, we made an examination, in the autumn of 1906, of some of the sources of domestic pollution of the River Dee. We have also seen the report prepared by the Burgh Surveyor on the subject, with the accompanying map, showing numerous points of pollution—actual or possible—of the river, from the Invercannie intake upwards, and we are satisfied that it is not practicable effectually to guard against dangerous pollution at all these points and at all times.

"In view, therefore, of the results of our examination of the water supply, and of our knowledge of the impracticability of adequately protecting the river against domestic pollution, we have no hesitation in expressing the opinion that the water supply of the city, in its present condition, is dangerous, and that steps should be taken either to filter the water or to obtain a supply from a source not open to domestic pollution.

"Filtration of the present supply is, in any case, advisable, in order to remove the turbidity which is so frequently observed after wet weather."

This report serves to confirm the opinion I have frequently expressed, in my annual public health reports, regarding the unsatisfactory, and even dangerous, character of the present water supply, so long as it remains unfiltered. The towns are quite exceptional in which a similar supply is drawn without filtration from a river open to the same kind and extent of pollution as the Dee. It may not be held to fall within the province of the Medical Officer of Health to express an opinion upon the recent proposals for the provision of a purer and more ample water supply for the city, especially when these proposals have assumed a somewhat controversial character; but, having recently visited, along with the Town Council, the source of a proposed new supply in the River Avon, and knowing something of the nature of its gathering ground and of the character of the water, I cannot refrain from expressing the opinion that the city would be highly fortunate if it were found practicable to obtain a new supply from such a source. The water is obviously one of great natural purity, and so placed as to be beyond the possibility of dangerous contamination, and the best of all waters is one—like this of the Avon—of such natural purity as not to require filtration. Such a water is more wholesome and safer hygienically than a contaminated water purified by filtration.

The diseases most likely to be propagated in water are, as it is well known, cholera, typhoid, and diarrhoeal diseases. The repeated outbreak of cholera in Europe in recent years, and its occurrence in ports in frequent communication by sea with Aberdeen, such as the Baltic ports, in some of which there is at present a considerable number of cases, shows that we cannot ignore the risk of this highly dangerous disease being at some time conveyed to this city or its vicinity. In such an event, Aberdeen is absolutely wanting in proper protection against the possibility of infection of its water supply, an infection which might, as at Hamburg some years ago, precipitate an epidemic of hundreds of cases, if even the excreta from a single case of cholera were to reach the Dee above the intake of the city's supply. We may believe that such a catastrophe is very remote, but it has been a frequent experience, where such epidemic explosions have occurred, either of cholera or of typhoid, that they come without warning and after long years of apparent immunity from the consequences of a contaminated water supply. No community, however small, should knowingly expose itself to so grave a risk, and still less a town of the size of Aberdeen.

## SEWERAGE.

The new main outlet for the sewage of the city at Girdleness was brought into use for the first time during the past year. The new scheme of sewerage contemplates the discharge of practically the whole sewage of the city at Girdleness, but some time must yet elapse before the scheme is completed.

Owing to unexpected engineering difficulties, considerable delay has occurred in the completion of the new sewer for the drainage of the Woodside district, but these difficulties have now been overcome, and the sewer ought soon to be in operation. This will help to bring about a much-needed purification of the River Don, but a large part of the present pollution will still remain so long as the extensive paper works beyond the boundary of the city continue to discharge their effluents into the river without adequate purification.

During the summer of the present year the whole of the fish in the tanks of the Experimental Station of the Scottish Fishery Board in the Bay of Nigg, a short distance to the south of the Girdleness sewer outlet, died from some obscure disease, apparently of a staphylococcal character; and I understand it has been suggested that the disease might have been derived from the sewage and been introduced with fish caught in the sea near the outlet and afterwards placed in the tanks. This is a possible explanation, but in any case it proves nothing against the discharge of the sewage at Girdleness, for if the sewage may at times set up disease in fish, it would produce its effects wherever it might be discharged; and it is easy for the officers of the Fishery Board to avoid taking fish from near the Girdleness outlet. A bacteriological inquiry into the precise nature of the disease is, I believe, in progress.

## WEATHER AND DISEASE.

For the first time in these Annual Reports, there is provided a table summarising the state of the weather for each month throughout the year, and comparing it with the average for the preceding ten years.

Along with this table is supplied a table containing the number of deaths in each month from the more important diseases, together with the average number for the preceding five years. It will be observed that the numbers in this table have been corrected for transferred deaths, and, therefore, do not in every instance exactly agree with certain earlier tables in the report.

The number of persons dying at each age-period during each month is also given.

The tables have considerable hygienic and medical interest, but it is not possible to indicate more than a few of the various points.

The meteorological averages for the ten years show that, in Aberdeen, February is the coldest month of the year—elsewhere it is more usually January—and that July is the warmest. They also show that December receives the least sunshine and June the most—five to six times more than December. June is also the driest month, while December is the wettest. January is the most windy month, and August is the least windy. The mean daily range of temperature—or the difference between the highest and the lowest for the day—is greatest from April to September, and is lowest in January. It increases rapidly between January and April. Northerly winds are distinctly more prevalent in May than in any other month; easterly winds prevail most in June; westerly winds, in December and January; and southerly winds, in December and January.

Last year the warmest and coldest months were in agreement with the average, but the mean daily temperatures of July, August, and September were almost alike. The sunniest month was September, and was closely followed by March, while the wettest month was October, and, quite contrary to precedent, was followed by June. July suffered most from northerly winds, while December revelled in southerly winds.

Turning to the table of deaths, we find that, according to the average for the five years ending 1906, the most fatal month for the population as a whole is January, and the least fatal is July. The infant mortality also reaches its maximum and minimum about the same time as that for the population generally, but deaths of adolescents do not appear to vary much throughout the year.

Last year, by far the highest mortality at all ages was in January, and the lowest was in July. The excess of mortality in January was chiefly due to bronchitis, and was associated with a high death-rate from measles and whooping cough. The weather of January was somewhat colder than the average and less wet, but more sunny, and the winds were southerly and westerly—conditions which should scarcely have affected mortality; but the weather of the preceding December was somewhat harsher than usual.

The low death-rate in July, which was considerably under the average for preceding years, is, contrary to expectation, associated with a distinctly lower temperature than usual, and with less sunshine.

These observations apparently show little relationship between weather and mortality as generally understood; but the relationship is undoubtedly a complex one, and cannot readily find expression in figures. Moreover, a death within a particular month may be only the ending of an illness which began with a chill some months previously.

Leaving the question of the effect of the weather aside, the table of deaths shows that the mortality from some diseases is fairly evenly distributed throughout the year—for example, phthisis, and other forms of tuberculosis; diseases of the digestive system (with, however, a slight increase in autumn); diseases of the circulatory system; and malignant diseases. The most variable are the commoner zymotics, like measles, whooping cough, and scarlet fever, which have a much higher mortality in winter than in summer; and bronchitis, which presents almost equally great extremes. The mortality from pneumonia is also considerably smaller in summer than in winter, but not to the same degree as bronchitis. Prematurity as a cause of death is also much more prevalent in winter than in summer; but whether due to a larger proportion of premature births in winter, or to a greater difficulty in rearing premature children in the colder weather, cannot be discovered from the tables.

If the lungs are to be regarded as the organs that react most readily to weather conditions, and if bronchitis can be taken as a measure of this reaction, the most healthy months of the year, in Aberdeen, are usually from June to October; while the most unhealthy are from December to March. Last year the corresponding months were May to September, with, possibly, October and November; while the most unhealthy were January, February, March, and December.



TABLE XIV.—METEOROLOGICAL RECORD OF THE CITY OF ABERDEEN FOR EACH MONTH.  
(From observations at King's College Observatory.)

YEAR 1907.																										
MONTH.	BAROMETRIC PRESSURE (at 32° F. and Sea Level).				TEMPERATURE OF ATMOSPHERE.				Mean Temp. of Ground or (4 feet below surface).		RELATIVE HUMIDITY (Sat. = 100).		RAIN-FALL (If Snow, indicate by S.)		SUNSHINE. (Percentage of possible Sunshine.)		WIND. DIRECTION; AND DURATION IN HOURS.								Velocity (Average No. miles per day.)	
	Inches.	Inches.	Mean Daily Range.	Inches.	Absol. Highest.	Absol. Lowest.	Mean Daily Temp.	Mean Daily Range.	Mean Daily Temp.	Mean Daily Range.	Relative Sat. = 100.	Dura- tion.	Amount.	Dura- tion.	Hours.	Percentage of possible Sunshine.	N.	N.E.	E.	S.E.	S.	S.W.	W.	N.W.	Calm	Average
January, .	31.05	28.51	0.33	0.33	51.0	24.9	38.2	8.5	39.6	76	73	1.60	59.6	26	8	2	...	37	145	303	153	96	...	...	219	
February, .	30.58	28.14	0.33	0.33	54.1	25.7	37.7	8.9	37.9	75	79	1.52	110.6	43	6	2	15	172	215	124	136	...	...	...	245	
March, .	30.47	28.81	0.30	0.30	60.8	23.8	42.3	11.2	39.2	74	57	1.31	172.7	48	12	8	15	42	213	210	186	58	...	...	220	
April, .	30.20	29.17	0.19	0.19	59.1	31.9	43.1	8.9	42.4	78	65	1.35	149.9	35	34	30	131	177	120	55	91	82	...	...	232	
May, .	30.33	28.68	0.21	0.21	63.6	37.1	46.6	8.8	45.2	78	113	3.20	141.4	28	79	116	102	82	144	42	63	116	...	...	206	
June, .	30.05	29.29	0.21	0.21	66.3	38.0	51.6	11.5	48.2	78	121	4.08	148.5	28	25	14	42	139	182	87	115	116	...	...	194	
July, .	30.52	29.46	0.15	0.15	73.8	43.4	53.9	9.3	51.1	78	53	1.40	128.7	25	69	62	124	97	76	50	66	200	...	...	152	
August, .	30.14	29.38	0.22	0.22	67.5	41.0	53.6	12.3	52.3	76	84	2.25	143.3	31	17	14	38	68	150	223	117	117	...	...	173	
September, .	30.56	29.34	0.18	0.18	72.4	34.3	53.7	13.3	51.3	77	26	1.20	183.0	48	27	10	20	74	253	154	112	65	5	...	...	145
October, .	30.18	29.03	0.24	0.24	61.0	32.2	48.5	8.4	50.2	85	103	5.08	87.1	28	80	73	41	144	163	79	69	90	...	...	198	
November, .	30.46	28.97	0.28	0.28	53.0	29.7	43.0	8.2	46.9	81	51	2.07	48.8	21	19	5	24	73	183	138	149	129	...	...	206	
December, .	30.40	28.55	0.30	0.30	49.4	28.8	39.8	7.1	42.4	82	98	3.40	25.3	13	12	17	75	91	205	200	52	92	...	...	216	
Monthly Average	30.41	28.94	0.25	...	61.0	32.6	46.0	9.7	45.6	78	77	2.37	116.6	30	32	29	51	87	168	146	108	108	0.4	...	201	
Total for Year, .	...	...	...	...	...	...	...	...	...	...	923	28.46	1398.9	...	388	353	614	1039	2011	1756	1297	1297	5	...	...	

AVERAGE FOR TEN YEARS, 1897-1906.																										
January, .	30.60	28.80	0.31	...	52.1	25.9	39.0	7.6	41.1	81	74	2.12	44.8	20	22	8	16	73	155	219	139	111	0.1	...	...	326.2
February, .	30.48	28.78	0.29	...	51.3	21.7	37.5	8.5	39.7	79	82	2.20	76.8	29	32	10	24	49	140	149	132	139	...	...	...	321.9
March, .	30.36	28.85	0.27	...	55.3	24.5	39.9	9.4	40.2	78	97	2.34	109.2	30	64	22	39	83	143	151	101	141	...	...	...	313.5
April, .	30.37	29.09	0.24	...	59.4	30.2	42.9	10.6	42.2	78	101	2.46	162.2	39	41	24	55	102	170	100	107	120	0.1	...	...	302.3
May, .	30.43	29.16	0.19	...	64.1	34.1	46.8	10.6	45.6	78	101	2.73	177.4	36	120	57	74	93	136	67	63	132	1.2	...	...	271.9
June, .	30.42	29.43	0.14	...	69.7	38.4	52.9	11.0	50.1	78	59	1.51	179.5	34	96	51	94	114	144	58	48	114	0.5	...	...	227.9
July, .	30.32	29.40	0.17	...	73.6	43.6	57.0	11.6	53.4	77	77	2.63	165.6	32	68	51	72	102	138	97	99	116	0.9	...	...	217.7
August, .	30.30	29.27	0.19	...	72.6	42.8	56.1	11.0	54.4	79	77	2.84	157.1	34	51	36	60	97	178	113	93	116	0.9	...	...	240.5
September, .	30.43	29.19	0.20	...	68.3	37.8	53.9	11.2	53.2	80	72	2.06	133.4	35	40	20	38	90	176	127	117	114	0.4	...	...	277.6
October, .	30.45	28.95	0.25	...	61.5	33.7	47.4	9.8	50.2	82	105	2.80	98.4	23	33	15	35	66	170	167	125	133	...	...	...	318.2
November, .	30.49	28.88	0.26	...	56.5	27.5	43.4	8.1	46.8	82	101	2.81	53.9	23	36	9	29	82	142	179	137	105	...	...	...	315.7
December, .	30.48	28.61	0.30	...	53.9	23.8	39.7	8.0	43.1	82	121	2.89	33.5	17	22	4	20	81	163	218	140	95	0.1	...	...	279.2
Monthly Average	30.43	29.03	0.23	...	61.5	32.0	46.4	9.8	46.7	80	89	2.45	116.0	30	52	26	46	86	155	137	108	120	0.4	...	...	...
Total for Year, .	...	...	...	...	...	...	...	...	...	...	1067	29.39	1391.8	...	625	307	556	1032	1855	1645	1301	1436	4.2	...	...	...



TABLE XV.—NUMBER OF DEATHS FROM PRINCIPAL CAUSES IN EACH MONTH.  
(Corrected for transferred deaths.)

MONTH.	CAUSE OF DEATH.										AGES OF PERSONS DYING.																
	Measles.	Whooping Cough.	Scarlet Fever.	Diphtheria.	Typhoid.	Influenza.	TUBERCULOSIS.				Pneumonia.	Bronchitis.	Circulatory Diseases.		Diseases of Urinary System.	Convulsions.	Prematurity.	Malignant Diseases.	YEARS.				All Ages.				
							Lungs (Phthisis).	Brain (Tub. Meningitis).	Abdomen (Tub. Mesenterica).	Other (Tub. Peritonitis).			Cerebral Apoplexy, and Hemiplegia.	Other Diseases.					Under 1 Year.								
																			0-5	5-15	15-25	25-60	60+				
YEAR 1907.																											
January, . . . . .	16	13	0	5	1	8	17	7	2	2	3	15	29	51	18	31	7	5	13	17	73	120	10	10	73	103	316
February, . . . . .	5	16	1	0	0	7	19	2	2	0	0	11	23	20	9	23	4	4	8	18	51	70	11	4	57	80	222
March, . . . . .	3	6	0	0	1	1	19	6	5	0	2	14	13	16	12	25	8	10	9	13	59	84	13	6	60	84	254
April, . . . . .	1	9	0	1	1	1	19	5	5	2	4	13	17	3	11	21	7	3	9	13	60	84	7	52	80	227	
May, . . . . .	0	8	0	2	1	1	20	1	4	4	4	13	17	3	11	21	7	1	3	11	29	53	13	13	46	73	198
June, . . . . .	2	10	0	0	1	0	21	5	4	1	1	16	22	8	12	30	4	4	6	11	47	61	12	15	53	63	204
July, . . . . .	2	0	0	1	1	0	7	5	3	1	1	10	17	4	12	22	7	8	8	15	35	51	5	2	35	63	156
August, . . . . .	2	3	0	2	0	1	12	3	2	3	3	15	9	8	11	19	7	5	12	18	38	58	8	7	45	57	175
September, . . . . .	0	6	0	0	0	0	8	2	2	1	1	20	11	7	8	30	7	4	12	15	42	59	6	8	47	52	172
October, . . . . .	0	2	0	1	0	1	21	3	1	4	1	11	9	13	10	25	5	2	10	15	33	43	3	15	51	48	160
November, . . . . .	0	3	1	2	0	1	8	5	5	0	18	7	12	16	22	4	2	9	17	37	52	3	4	48	65	172	
December, . . . . .	6	4	3	3	1	1	20	2	2	2	15	13	18	9	25	6	3	15	17	57	75	11	16	47	69	218	
Total for year 1907, . . . . .	37	82	5	19	7	22	191	56	37	21	178	192	189	150	302	77	51	114	180	561	817	99	107	614	837	2474	
AVERAGE FOR PRECEDING FIVE YEARS—1902-06.																											
January, . . . . .	13	7	1-8	2-0	0-2	4-4	17	4-0	2-4	2-6	22	28	30	12	31	7	6	9	12	67	101	10	12	68	84	275	
February, . . . . .	7	12	1-2	1-8	0-4	3-2	19	5	2-0	2-6	18	19	27	12	28	8	5	12	12	63	95	11	9	58	81	253	
March, . . . . .	6	11	1-2	0-8	0	9	22	6	3-2	3-4	20	23	25	10	35	8	5	12	12	58	90	9	14	68	86	267	
April, . . . . .	3-4	12	0-8	0-4	0-6	3-4	18	5	4-0	1-8	15	23	17	10	33	5	7	10	11	57	84	10	13	58	70	236	
May, . . . . .	0-6	12	0-2	1-0	0-6	1-0	18	6	4-8	2-4	20	17	17	10	29	7	4-8	9	10	53	78	8	12	52	74	224	
June, . . . . .	0-8	4-4	0-2	0-8	0-2	1-8	23	3-8	3-2	3-0	18	17	10	9	27	3-8	5	8	10	45	62	8	11	53	61	196	
July, . . . . .	0-6	6	0-6	0-4	0	0-2	16	3-0	2-0	2-0	17	12	8	13	24	4-2	4-9	7	13	41	55	6	10	45	58	173	
August, . . . . .	1-4	4-4	0-4	0-6	0-4	0-4	14	4-8	1-6	2-4	24	8	7	12	23	7	4-9	8	11	48	63	5	9	45	59	182	
September, . . . . .	1-2	2-0	1-8	1-8	0-2	0-4	13	3-6	2-4	2-8	27	12	9	9	22	4-6	3-6	7	12	53	70	9	10	39	50	177	
October, . . . . .	6	3-0	1-8	1-6	0-8	0-6	19	3-2	1-6	1-4	22	15	12	12	26	5	3-6	8	11	57	75	8	13	47	60	203	
November, . . . . .	11	3-6	1-0	1-4	0-2	1-4	13	2-6	2-4	2-0	23	16	16	11	27	4-4	5	9	13	56	80	8	10	48	65	211	
December, . . . . .	16	7	1-2	2-0	0	3-4	19	3-2	3-0	2-2	21	20	26	14	30	7	7	11	10	69	103	9	13	56	83	264	
Average Total for 1902-06, . . . . .	66	84	12	15	3-6	29	211	50	33	29	247	210	204	134	335	71	60	110	137	667	956	101	136	637	831	2661	

## CITY HOSPITAL.

(Table XVI.)

No additions were made to the buildings of the hospital during the year, but towards the end of the year, and throughout the past winter, difficulty was experienced in finding adequate accommodation for cases requiring hospital isolation and in securing the separate treatment of doubtful cases or of cases of mixed infection, of which there happened to be more than the usual proportion. With the usual allowance of 2,000 cubic feet for each bed, the hospital, with all its wards, including the wooden pavilion, contains accommodation for only 127 beds. With the addition of children's cots, the beds are actually considerably beyond this number, but the ventilation of the wards is well attended to, and there is no evidence of the patients having suffered from a slight overcrowding. The hospital ought not, however, to reckon upon the too frequent use of such additional cots, and, even with these cots, the accommodation has been at various times in recent years insufficient to allow of the satisfactory disposition of the cases. The proportion of beds in an isolation hospital, to the population which it is intended to serve, is usually put at not less than one bed per 1,000. As the population of Aberdeen may be taken as approximating to 170,000, it is clear that, if this proportion is a proper guide, the hospital accommodation is distinctly inadequate. This view has commended itself during the present year to the Town Council, and plans have been prepared and approved for an extension which will add 58 beds, but these include 12 beds in a small block intended for the treatment of skin diseases, to which reference has already been made in an earlier part of the report.

It is proposed so to arrange the construction of one of the pavilions, in regard to the form of its windows and the provision of a verandah along the whole of its southern side, that it will be suitable for the accommodation of cases of pulmonary phthisis, in the event of the Town Council determining to admit such cases into the hospital.

The accommodation for the nursing staff has also been for some time insufficient, and has rendered it difficult for the Matron, when the hospital is full, to make provision for the increased staff. Accordingly, the Council have agreed to heighten by one storey part of the Nursing Home. This will provide 13 additional bedrooms for nurses, and it will also contain a nurses' recreation room, which has long been wanted.

It is expected that these additions will be completed before the winter of 1909-10. The proposals originally included an extra pavilion, but, owing to a difficulty in finding a suitable site, its erection has in the meantime been postponed.

The number of admissions (734) to the hospital during the year was about equal to the average for the preceding ten years, but considerably above the average for each of the preceding two years.

The accompanying table gives a summary of all the cases admitted, together with a corresponding summary for each of the preceding ten years. As usual, the bulk of the cases consisted of scarlet fever, but there was also a large number of cases of diphtheria.

In all, 448 cases of *Scarlet Fever* were admitted. The cases, as remarked earlier in the report, were of a mild type, so that the mortality was exceptionally low, being less than 1 per cent. This is the lowest case-mortality for scarlet fever on record since the hospital was

TABLE XVI.

## CITY HOSPITAL.—ANNUAL SUMMARY, 1907.

ZYMOTIC ADMISSIONS AND DEATHS DURING EACH YEAR FROM 1897 TO 1907 INCLUSIVE.

DISEASE.		1907	1906	1905	1904	1903	1902	1901	1900	1899	1898	1897	1897-1906.	
													Total	Annual Average
Small Pox,	Admitted, ...	1	0	0	3	0	0	7	0	2	0	0	12	1.2
	Died, ...	0	0	0	0	0	0	1	0	0	0	0	1	0.1
	Percent. of Deaths to Admissions, ...	0	0	0	0	0	0	14.3	0	0	0	0	...	8.3
Measles, ...	Admitted, ...	30	50	6	72	78	156	133	342	191	194	129	1351	135.1
	Died, ...	11	3	0	1	9	3	4	9	4	7	0	40	4.0
	Percent. of Deaths to Admissions, ...	36.7	6.0	0	1.4	11.5	1.9	3.0	2.6	2.1	3.6	0	...	3.0
Scarlet Fever, ...	Admitted, ...	448	140	185	534	408	278	340	280	343	920	842	4270	427.0
	Died, ...	4	5	7	16	9	8	5	7	16	28	16	117	11.7
	Percent. of Deaths to Admissions, ...	0.9	3.6	3.8	3.0	2.2	2.9	1.5	2.5	4.7	3.0	1.9	...	2.7
Diphtheria,	Admitted, ...	174	192	127	131	120	107	101	82	78	79	26	1043	104.3
	Died, ...	14	17	7	9	8	8	5	6	8	4	2	74	7.4
	Percent. of Deaths to Admissions, ...	8.0	8.9	5.5	6.9	6.7	7.5	4.9	7.3	10.3	5.0	7.7	...	7.1
†Typhoid Fever, ...	Admitted, ...	17	9	13	24	22	28	70	26	35	18	0	245	24.5
	Died, ...	4	0	3	2	0	1	1	2	6	2	0	17	1.7
	Percent. of Deaths to Admissions, ...	23.5	0	23.1	8.3	0	3.6	1.4	7.7	17.1	11.1	0	...	6.9
Typhus Fever, ...	Admitted, ...	0	0	97	22	0	0	0	0	5	5	0	129	12.9
	Died, ...	0	0	12	1	0	0	0	0	0	2	0	15	1.5
	Percent. of Deaths to Admissions, ...	0	0	12.4	4.5	0	0	0	0	0	40.0	0	...	11.6
Other Zymotics,	Admitted, ...	44	17	12	29	17	32	18	14	10	12	4	165	16.5
	Died, ...	9	0	2	4	2	3	1	2	1	1	0	16	1.6
	Percent. of Deaths to Admissions, ...	20.5	0	16.7	13.8	11.8	9.4	5.6	14.3	10.0	8.3	0	...	9.7
Total Zymotics,	Admitted, ...	714	408	440	815	645	601	669	744	664	1228	1001	7215	721.5
	Died, ...	42	25	31	33	28	23	17	26	35	44	18	280	28.0
	Percent. of Deaths to Admissions, ...	5.9	6.1	7.0	4.0	4.3	3.8	2.5	3.5	5.3	3.6	1.8	...	3.9
Quarantine,	Admitted, ...	20	37	181	25	14	6	43	18	22	34	16	396	39.6
	Died, ...	5	6	6	3	3	0	0	0	0	0	1	19	1.9
	Percent. of Deaths to Admissions, ...	25.0	16.2	3.3	12.0	21.4	0	0	0	0	0	6.2	...	4.8

† Prior to 1899, the cases of Typhoid Fever were mostly removed to the Royal Infirmary or Sick Children's Hospital for treatment.

opened. Scarcely any case assumed a serious aspect where there was not some previous constitutional weakness or illness. Complication with rheumatism was not infrequent, but it was scarcely ever serious. Albuminuria was rare. Swelling of the glands was frequently met with, but the swelling was slight, and in scarcely a single case was there suppuration. A few cases showed well-marked throat symptoms, but, generally, the inflammatory condition of the throat passed off in three or four days.

*Diphtheria* accounted for 174 of the admissions. This number is distinctly above the average for the preceding ten years, but is somewhat less than the number for 1906. The case-mortality (8.0 per cent.) was slightly less than in the immediately preceding year, but it was higher than the average (7.1) for the previous ten years. Most of the fatal cases died shortly after admission, having been sent to the hospital only after the symptoms had become dangerous. Out of a total of 14 deaths, 10 took place within 24 hours from the time of admission. In 16 out of the total cases treated, tracheotomy was found to be necessary on the admission of the patient, and was successful in saving life in 11 cases.

The mortality from diphtheria could not fail to be reduced if there were a more general and early use of anti-toxin.

*Measles* contributed 30 cases to the hospital during the year. There was an unusually high mortality among these cases—11 of them having ended fatally—but all the deaths, except one, occurred among children removed from the Sick Children's Hospital, who were suffering from various serious ailments in addition to measles. Among the children so removed were two twin infants, who were both suffering from precisely the same diseases—anal prolapse and double hernia—and who took ill on the same day with measles, and died within three days of one another.

Of *Typhoid Fever*, 17 cases were admitted to the hospital, including 2 cases of para-typhoid. Four cases ended fatally, including 1 of para-typhoid; but two of the cases were of doubtful diagnosis, and never revealed the presence of the typhoid germ, although searched for more than once.

No cases of *Typhus Fever* were admitted, and only one case of *Small-pox*, to which reference has already been made in the body of the report. The patient made an excellent recovery, the attack being mild.

Among other zymotic diseases treated in the hospital were the three cases of *Cerebro-Spinal Fever* referred to earlier in the report. All of them ended fatally—one after three days' illness, another after five days' illness, and the third after a prolonged illness lasting for nine weeks. The symptoms in each case were characteristic, and the special bacillus was found repeatedly in the cerebro-spinal fluid.

MATTHEW HAY, M.D.,

*Medical Officer of Health.*

ABERDEEN, 14th November, 1908.





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APPENDIX.

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## SPECIAL INQUIRY ON INFANTILE MORTALITY

## IN ABERDEEN,

*In Year 1907.*

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During the past year, and also in the current year, inquiry has been made by a visit from the Sanitary Staff in each case of a death of a child under two years of age, in order to obtain full information as to the circumstances bearing on the death. For this purpose, cards were used with queries and headings for about thirty items of information relating to the history and health of the child, nature of feeding, circumstances of home life, and size and condition of house.

Information has been obtained regarding nearly all the deaths of the particular age during the year, but in a small proportion of cases it was not available owing to the removal of the parents shortly after the death. In a very few cases, the information was refused, but, generally, it was given with readiness.

It was thought advisable to extend the inquiry beyond the age of one year, usually associated with infantile mortality—partly for comparison, and partly to emphasise the fact that the mortality in the second year of life is too large not to deserve consideration.

The number of deaths regarding which detailed information was obtained amounted to 659, out of a total of 702 deaths of children under two years of age, or 521 out of 561 deaths under one year. In some of the following tables the number of deaths actually investigated are alone included, while in others, where ratios to births had to be calculated, the number of deaths has for each grouping been raised in proportion to the difference between the deaths investigated and the deaths actually occurring.

A primary distinction was drawn between the deaths of children who were breast-fed (whole or part) and those who were bottle-fed (including spoon-fed). Of the former, there were 307 under one year, or 400 under two years; and of the latter, there were 215 under one year, or 259 under two years, among the deaths regarding which information was obtainable.

It may be convenient, as a basis for subsequent observations, to give in the first place a table (Table A), which has been prepared from the returns of the Registrars, and in which the deaths of all infants during the past year are classified according to age and cause of death. For comparison, the table is extended so as to embrace the deaths of children up to five years. Averages for the preceding three years are also given—years in which the total infantile mortality (deaths of infants under one year, per 1,000 births) averaged 138, as against 125 for last year.



TABLE A.—CAUSES OF DEATH AMONG CHILDREN—Year 1907.

Causes of Death.	No. of Deaths at each Age.														Average of preceding 3 years.	
	WEEKS.				MONTHS.				YEARS.					TOTAL.	0-1	0-5
	0-1	-2	-3	-4	* 0-3	-6	-9	-12	* 0-1	-2	-3	-4	-5	* 0-5		
Prematurity .....	68	8	17	8	114	1	...	...	115	...	...	...	...	115	116	116
Congenital Defects...	8	8	0	2	26	1	...	1	28	...	...	1	...	29	26	27
Teething .....	...	...	...	...	...	...	1	...	1	2	...	...	...	3	5	7
Wasting and Debility	13	6	4	4	44	12	7	2	65	...	...	...	...	65	87	88
Convulsions .....	3	4	4	1	25	5	3	3	36	7	1	3	...	47	49	58
Inflam. of Brain and Membranes }	...	...	...	...	3	1	5	...	9	6	1	2	1	19	14	26
Pneumonia .....	1	...	1	1	9	17	17	15	58	33	9	4	3	107	55	104
Bronchitis .....	...	...	1	3	16	17	14	3	50	10	1	1	...	62	57	74
Diseases of Circu- lation .....	2	...	...	...	3	3	...	...	6	2	...	...	...	8	10	12
Urinary Diseases Dis. of Digestive Syst. including Diarrhoea }	2	1	1	5	26	21	18	5	70	12	8	4	...	94	108	130
Tuberculosis of— (a) Brain .....	...	...	...	...	...	...	7	2	9	14	6	7	5	41	12	36
(b) Abdomen .....	...	...	...	...	...	3	1	2	6	6	5	1	3	21	8	22
(c) Lungs.....	...	...	...	...	...	1	1	1	3	3	1	...	1	8	1	6
(d) Other forms ...	...	...	...	...	...	...	...	...	...	5	...	...	1	6	3	8
Measles.....	...	...	...	...	...	4	4	4	12	11	8	1	1	33	24	66
Whooping Cough ...	...	...	...	1	12	9	12	12	45	17	11	3	3	79	36·7	81
Scarlet Fever .....	...	...	...	...	...	...	2	...	2	1	...	1	...	4	0·3	9
Diphtheria .....	...	1	...	...	1	...	2	1	4	3	2	1	2	12	3	11
Typhoid Fever .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0
Epidemic Cerebro- Spinal Mening. }	...	...	...	...	...	1	...	...	1	...	...	1	...	2	0	0
Burns and Scalds ...	...	...	...	...	...	...	...	...	...	3	5	2	3	13	1	7
Other Accidents.....	2	...	1	...	7	2	...	1	10	...	2	1	...	13	9	11
Other Causes .....	2	3	...	1	13	5	4	9	31	6	1	...	2	40	48	65
ALL CAUSES.....	101	31	29	26	299	103	96	63	561	141	61	33	25	821	675	967
Average of preced- ing 3 years .....	119	33	29	24	351	139	97	88	675	170	61	40	21	967		

\* This column includes all deaths in preceding columns.

It will be sufficient, meantime, to remark that the principal causes of death among infants under one year were prematurity, which towered above the rest; diseases of the digestive system (including diarrhoea); wasting and debility; zymotic diseases, chiefly whooping cough; pneumonia; bronchitis; and convulsions.

Among children between one and two years, the chief causes were pneumonia; zymotic diseases, chiefly measles and whooping cough; and tuberculous diseases.

It may also be noted that the incidence of mortality was very high in the earliest weeks following birth. Rather more than one out of every six deaths under one year took place within the first week, and more than one-third during the first month; while one-half of the whole occurred before the end of the third month.

This emphasises the need for the earliest possible visitation of mothers by Health Visitors if the fullest benefits from their services are to be obtained.

TABLE B.—DISTRIBUTION OF DEATHS OF INFANTS UNDER 2 YEARS, ACCORDING TO AGE, SEX, AND FEEDING.

AGE IN MONTHS.	0-1		-2		-3		-6		-9		-12		-18		-24		TOTALS.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Both Sexes.
Breast-fed .	71	46	18	14	14	8	35	28	25	17	19	12	25	21	25	22	232	168	400
Bottle-fed .	36	25	9	12	8	13	29	15	22	22	12	12	13	14	5	12	134	125	259
Totals—																			
Male .	107	...	27	...	22	...	64	...	47	...	31	...	38	...	30	...	366	...	...
Female .	...	71	...	26	...	21	...	43	...	39	...	24	...	35	...	34	...	293	...
Both Sexes.	178		53		43		107		86		55		73		64		...		659

TABLE C.—DISTRIBUTION OF DEATHS ACCORDING TO AGE OF CHILD, FEEDING, AND SIZE OF HOUSE.

AGE IN MONTHS,	0-1		-2		-3		-6		-9		-12		-18		-24		TOTALS.		
SIZE OF HOUSE.	Breast-fed.	Bottle-fed.	Breast-fed.	Bottle-fed.	Breast-fed.	Bottle-fed.	Breast-fed.	Bottle-fed.	Breast-fed.	Bottle-fed.	Breast-fed.	Bottle-fed.	Breast-fed.	Bottle-fed.	Breast-fed.	Bottle-fed.	Breast-fed.	Bottle-fed.	Both
1 Room . . . .	13	2	7	...	3	5	8	5	5	6	2	3	7	1	4	2	49	24	73
2 Rooms . . . .	74	32	14	12	15	11	38	20	24	18	25	9	30	19	25	10	245	131	376
3 „ . . . .	27	20	6	7	4	5	16	13	11	14	3	8	8	4	13	3	88	74	162
4 „ . . . .	2	6	4	2	...	...	1	5	2	6	...	1	1	2	2	...	12	22	34
5 „ and upwards	1	1	1	...	...	...	1	...	...	...	1	3	...	1	3	2	6	8	14
Total {																			
Breast-fed .	117	...	32	...	22	...	64	...	42	...	31	...	46	...	47	...	400	...	} 659
Bottle-fed .	...	61	...	21	...	21	...	43	...	44	...	24	...	27	...	17	...	259	

*Age, Sex, and Feeding.*—In the next table (Table B), which deals with the deaths regarding which information as to feeding was obtainable, the whole number of infantile deaths for the year is not embraced in the table, but it may be assumed that the inclusion of the small number necessarily omitted would not have materially altered the proportions of the grouping.

Male births, nearly always and everywhere, exceed female births. Last year, in Aberdeen, the proportion of males to females born was as 113:100. But Table B shows, what is also practically universal, that the mortality at early ages was much heavier among males than females. Among children under one year, male deaths, in proportion to female deaths, were as 133:100. Among deaths in the second year of life, the sexes were about equally represented.

The preponderance of male deaths during the first year was more evident among breast-fed than bottle-fed children. It was also found to be greater among children in the larger houses. Thus, in houses of one to three rooms, male deaths relatively to female deaths were as 12: 10; while in houses of four rooms and upwards they were as 17: 10.

It is supposed that the greater mortality among males after birth is due to the effects of a more difficult and tedious labour caused by the somewhat larger size of the male child; and difficult labour is less common among the women of the working classes than among those in more easy circumstances.

*Size of House and Feeding.*—Table C shows the distribution of the deaths in relation to the size of house in which the death occurred, as measured by the number of rooms. The age and feeding are also distinguished. The size of house is useful as a rough index of the means and standard of comfort of the occupants.

The great bulk of the deaths occurred in houses of two and three rooms. The number in one-roomed houses is small, merely because such houses are not now numerous in Aberdeen, and about three-fourths of them are occupied—according to the last census—by one person or two persons, without an infant.

The number of deaths of infants under one year in houses of four rooms, and especially in houses of five rooms and upwards, is also small, being only 37 for the whole of such houses.

It is obvious that the work of the Health Visitors is mainly required in houses of three rooms and under.

The next table (Table D) is particularly valuable, as it gives the mortality, per 1,000 births, taking place in different sized houses, the feeding of the infants being also distinguished. The number of births in each class of house, together with the nature of the feeding, is based partly on a special census and partly on the information acquired by the Health Visitors, and may be taken to be approximately correct. In this and other tables in which mortality rates are given in relation to births, the number of deaths has, for each group, been raised in proportion to the small difference between the deaths actually registered and the deaths regarding which the necessary information was procurable.

This table shows, in the first place, that the mortality among all breast-fed children under one year of age was, during last year, 108 per 1,000 births of such children, while among bottle-fed children it was 161. The difference is by no means so great in Aberdeen as it is sometimes stated to be elsewhere. It is possible that some mothers on being questioned as to the feeding of children that had died may have stated them to be breast-fed, when the breast-feeding had been no more than tried and then stopped; but in every case inquiry was made as to when the baby, if breast-fed, was weaned; and in only eight cases, according to the information supplied, was the baby stated to be weaned before it reached the age of three months. These cases are included among the deaths of breast-feds. If the deaths of infants, which had been exclusively breast-fed for the usual minimum period of six months before weaning, had solely constituted the group of deaths of breast-fed children, it would have been smaller, but a corresponding reduction in the number of births of breast-feds would have been necessary, as they have been defined in the same way as the deaths.

The difference between breast-feeding and bottle-feeding in relation to mortality was more marked in the larger houses than the smaller houses. In four-roomed houses the mortality in bottle-feds was more than three times as high as in breast-feds, and in three-roomed houses it was over twice as high.

TABLE D.—INFANTILE MORTALITY IN RELATION TO FEEDING AND SIZE OF HOUSE.

No. of Rooms	NUMBER OF BIRTHS.						NUMBER OF DEATHS,* under 1 year.						DEATHS, per 1,000 Births.					
	1	2	3	4	5 +	Total.	1	2	3	4	5 +	Total.	1	2	3	4	5 +	Total.
Breast-fed (Whole or part)	241	1,565	921	185	162	3,074	41	204	72	10	4	331	170	130	78	54	24	108
Bottle-fed.	107	655	444	115	107	1,428	22	109	73	21	5	230	206	166	164	183	47	161
All . .	348	2,220	1,365	300	269	4,502	63	313	145	31	9	561	181	141	106	163	30	125

\* Includes allowance for deaths regarding which information was not obtainable.

TABLE E.—INFANTILE MORTALITY IN RELATION TO FEEDING AND CROWDING.

Persons per Room {	NUMBER OF BIRTHS in Houses with					NUMBER OF DEATHS in Houses with					DEATHS, per 1,000 BIRTHS, in Houses with				
	1 or under.	2 or above 1.	3 or above 2.	Above 3.	TOTAL	1 or under.	2 or above 1.	3 or above 2.	Above 3.	TOTAL	1 or under.	2 or above 1.	3 or above 2.	Above 3.	TOTAL
Breast-fed . . .	197	1,270	1,099	508	3,074	12	124	131	64	331	61	98	119	126	108
Bottle-fed . . .	169	547	516	196	1,428	21	90	76	43	230	124	164	147	219	161
TOTAL . . .	366	1,817	1,615	704	4,502	33	214	207	107	561	90	118	128	152	125



If the groups of breast-feds and bottle-feds be taken separately, it will be seen from the table that, in the case of the breast-feds, the death-rate rapidly and uninterruptedly falls with an increase in the size of the house, so that in houses of five rooms and upwards the mortality-rate was only one-seventh, and, in houses of four rooms, only one-third of the rate in one-roomed houses.

It may be assumed that the amount of supply of mother's milk to the child did not differ much with the size of house, although the quality would in some degree be influenced by the feeding of the mother, which would naturally be less generous in smaller than in larger houses. But this could account for only a small part of the difference in the mortality. Much more is no doubt due to want of discrimination with regard to supplementary feeding, and to lessened care of the infant in general, proceeding largely from the excessive demands on a working-class mother with a number of young children.

Among bottle-fed children, the results for the past year, although showing an almost equally striking difference between the largest houses and the smallest houses, presents a somewhat curious uniformity in the houses of intermediate size. The mortality rate in houses of two and three rooms is practically the same for both, while the rate in four-roomed houses, in place of being lower, as might have been expected, is higher than in two and three-roomed houses.

The explanation may lie in the fact that the work of the Health Visitors was almost wholly confined to houses of three rooms and under, and that such work is naturally of most service where children are not breast-fed. But for their work, it may be justifiable to infer that the mortality rates among bottle-fed children in houses of three rooms and under would have been considerably greater than the table shows.

The numbers, however, are not large, and allowance must be made for statistical variations. The experience of the present year, during which the inquiry is being continued, will assist in testing the conclusions to be drawn from the results of last year.

The table also gives an indication of the proportion of breast-feeding to bottle-feeding among the babies born throughout the year in the different classes of houses. It is highest in houses of one and two rooms, and gradually falls with increase in size of house.

The proportions may be stated thus:—

Houses of	Bottle-Feeding.	Breast-Feeding.
One Room, . . . . .	10	23
Two Rooms, . . . . .	10	24
Three Rooms, . . . . .	10	21
Four Rooms, . . . . .	10	16
Five Rooms and upwards, . . . . .	10	15

It is plain that the better-class mother is more neglectful of her primary duty to her offspring than is the working-class mother. No doubt, with the latter, breast-feeding is sometimes a necessity rather than a choice. It is the cheapest—as it fortunately happens to be also the best—way of feeding the child, and it often lengthens the interval between successive births.

*Effect of Crowding.*—Table E deals with much the same question as the immediately preceding table, in that it endeavours to show the relationship between the degree of crowding



in houses and the infantile mortality; and crowding usually increases with diminution of size of house.

The results are practically the same as for size of house. Among breast-fed children the mortality rate in houses with an average of more than three persons to a room was twice as high as in houses with an average of one person or under. The difference was slightly less among bottle-fed children.

TABLE F.—CAUSES OF DEATH IN RELATION TO SIZE OF HOUSE.

CAUSE.	INFANTS UNDER 1 YEAR.										INFANTS, 1-2 Years.	
	NUMBER OF DEATHS in Houses of					DEATHS PER 1000 BIRTHS of Breast-fed Children in Houses of					No. of Deaths.	Deaths per 1000 Births — All Houses.
	1 Room	2 Rooms	3 Rooms	4 + Rooms	Total, all Houses.	1 Room	2 Rooms	3 Rooms	4 + Rooms	Total, all Houses.		
A.—BREAST-FED.												
Prematurity . . .	7	48	18	2	75	29	31	20	6	24	...	...
Congenital Defects .	4	5	5	1	15	16	3	5	3	5	...	...
Wasting & Debility	7	20	5	2	34	29	13	5	6	11	...	...
Convulsions . . .	3	13	6	0	22	12	8	7	0	7	11	4
Bronchitis . . .	1	21	5	3	30	4	13	5	9	10	5	2
Pneumonia . . .	6	18	9	0	33	24	12	10	0	11	28	9
Dis. of Digest. Syst. (incl. Diarrhoea)	4	21	9	3	37	16	13	10	9	12	7	2
Tuberculosis . . .	0	9	2	0	11	0	6	2	0	4	16	5
Zymotics . . .	3	28	3	1	35	12	18	3	3	11	20	7
B.—BOTTLE-FED.												
						DEATHS PER 1000 BIRTHS of Bottle-fed Children.						
Prematurity . . .	2	21	15	4	42	18	33	34	18	29	...	...
Congenital Defects .	0	8	4	0	12	0	12	9	0	8	...	...
Wasting & Debility	3	20	6	2	31	28	31	14	9	22	...	...
Convulsions . . .	1	7	6	0	14	9	11	14	0	10	...	..
Bronchitis . . .	2	11	6	1	20	18	17	14	5	14	5	4
Pneumonia . . .	5	10	6	4	25	47	15	14	18	17	5	4
Dis. of Digest. Syst. (incl. Diarrhoea)	3	15	13	2	33	28	23	29	9	23	5	4
Tuberculosis . . .	0	4	1	2	7	0	6	2	9	5	12	8
Zymotics . . .	3	14	10	2	29	28	21	23	9	20	12	8

*Cause of Death in Relation to Feeding and Size of House.*—The next table (Table F), which summarises the deaths from the principal causes in different sized houses, while distinguishing breast-feds from bottle-feds, is interesting and instructive, but its value would have been statistically greater had it dealt with larger numbers.

One of the most noteworthy points is the high mortality from wasting and debility and from diseases of the digestive system among bottle-feds as contrasted with breast-feds. In each case the mortality is about twice as high, and agrees with expectations. There is also a similarly large difference in the mortality from zymotics. It is intelligible that the infection of a disease such as whooping cough, cases of which are not, as a rule, removed for isolation in hospital, may spread more readily to a bottle-fed than to a breast-fed baby. The bottle-fed baby is more apt to be attended to by one of the children of the household, especially in the smaller houses, and the little nurse may herself be suffering from whooping cough while handling the teat and bottle.

Generally, for every disease the mortality decreases with increase in size of house, although the decrease is less pronounced for some diseases than for others. It is interesting to observe that the death-rate from prematurity among breast-fed children distinctly lessens with increase in size of house, as it would appear to indicate that prematurity, as the single largest cause of death, might be considerably reduced if only the prematurely born child could be nurtured under better conditions.

The mortality from prematurity constitutes so large a share—about one-fifth of the whole deaths under one year of age—that the time may soon come, especially in these days of a rapidly falling birth-rate, for providing, as has been done in a few places abroad, an institution or home in which facilities are provided for the nursing of premature children until they are strong enough to take the risks of the ordinary baby. There can scarcely be any doubt that such an institution would pay in the best sense, for, if fully utilised, it might save the lives of half of the children that ordinarily die of prematurity. In Aberdeen alone, a saving of 40 or 50 lives might be effected annually.

It is interesting to note in Table F that the mortality from tuberculous diseases was only slightly higher among bottle-feds than breast-feds under one year of age. In the second year of life, however, there was a more decided increase of deaths from these diseases among breast-feds.

Among breast-feds there were, in all, 27 deaths from tuberculosis among children under two years, while among bottle-feds there were 19 deaths. In view of the alleged relationship of ingested milk to tubercle, it is interesting to note that, among the 27 deaths of breast-feds, 12 were due to tubercular meningitis and 10 to abdominal tubercle; while among the 19 deaths of bottle-feds, 10 were due to tubercular meningitis, and only 3 to abdominal tuberculosis. In many cases, however, even of breast-fed children dying under one year, they had, as is usual, especially after the first few months of life, been partly fed on cow's milk.

*Tube and Tubeless Bottles.*—The kind of bottle used was ascertained in the case of all deaths under one year of the bottle-fed babies investigated, and it was found that the babies were about equally divided between the tube and tubeless—a few using both kinds.

The available data in regard to the relative use of the two kinds of bottles among infants generally in the city have proved not to be sufficiently accurate to enable a reliable

comparison to be made as to the rates of mortality among the differently fed children, but they point to a distinctly higher mortality among children fed from tube bottles. But even if the data had been more precise, the results might not show the whole difference, as a larger proportion (60 per cent.) of tubeless bottle children than of tube bottle children (47 per cent.) were stated to have been in weak health at birth. Contrary to expectation, deaths from diseases of the digestive system did not show any marked excess among the latter, but there was an undoubted excess of deaths from pneumonia, bronchitis, convulsions, and zymotics.

*Other Feeding.*—Information was sought as to the time when other food was begun in the case of both breast-fed and bottle-fed children, and it was found, as regards—(a) breast-fed children, that 16 per cent. of those dying before three months had been fed partly on other food than breast milk, and that so many as 90 per cent. of those dying between three and six months had been similarly fed. In about two-thirds of the cases at both ages, the other feeding was stated to be cow's milk, and in the remaining third to be farinaceous or prepared foods. As regards (b) bottle-fed children, 7 per cent. of those dying before three months, and 23 per cent. of those dying between three and six months, had been supplied with other foods besides milk. As no food other than milk, and preferably mother's milk, should be given during the first six months, there is plainly room for improvement among both breast-fed and bottle-fed children.

After six months, the use of other foods than milk increased rapidly with increase of age, and was usually of a simple farinaceous or floury kind. Artificially prepared foods, such as Mellin's Food, were not much used.

*Boiling or Sterilising of Milk.*—This was stated to have been done in a little under one-half of the bottle-fed children who died, but there is reason to believe that in many cases the sterilising was begun only after the child's health had begun to fail.

*Health of Child at Birth.*—This was ascertained from the parents in every death investigated, and it is surprising to find in how many cases the health of the child at birth was stated to be "bad"; but the cases were most numerous in children dying within a month from birth.

Among children dying under one month, 75 per cent. of the breast-feds and 79 per cent. of the bottle-feds were stated to have been in bad health at birth.

Among children dying between one month and one year, 26 per cent. of breast-feds and 41 per cent. of bottle-feds were described as in bad health at birth.

In all, among children (breast-fed and bottle-fed) dying between birth and one year, 48 per cent. were weak at birth.

Bad health at birth was by no means confined to children dying of prematurity, as is revealed in the following figures, which give for the children dying from each disease the percentage stated to have been in bad health at birth:—Prematurity, 63 per cent.; wasting and debility, 67 per cent.; congenital defects, 81 per cent.; convulsions, 54 per cent.; bronchitis, 44 per cent.; pneumonia, 30 per cent.; diseases of digestive system, 44 per cent.; convulsions, 54 per cent.; and zymotics, 24 per cent.

These are for children dying under one year, but even in children dying between one and two years, large per-centages were reported to have been in bad health at birth.

It is obvious that with so striking a proportion of children of impaired vitality at birth,

the task facing Health Authorities in dealing with infantile mortality is the more heavy. For such children, if not under medical care, repeated visitation by Health Visitors or Voluntary Visitors must in many instances be desirable.

Bad or weak health of the infant at birth—for it rarely amounts to positive disease—must be due mainly to maternal conditions, and its large prevalence indicates how important it is not to omit from consideration the health and feeding of the prospective mother in any thorough scheme for the reduction of infant mortality.

*Regularity of Employment of Father.*—The steadiness of employment of the bread-winner has, of course, an important bearing on the standard of comfort in a household, and the supply of the necessary food for mother and child. The following table summarises the information obtained in this respect regarding a large proportion of the deaths investigated:—

TABLE G.—REGULARITY OF EMPLOYMENT OF FATHER.

	BREAST-FED INFANTS.		BOTTLE-FED INFANTS.	
	Percentage to Total Deaths.		Percentage to Total Deaths.	
	Under 1 year.	1 and under 2 years.	Under 1 year.	1 and under 2 years.
Good, . . . .	71	68	68	77
Fair, . . . .	8	13	16	9
Indifferent, . . . .	19	19	11	14
Bad, . . . .	2	...	5	...
TOTAL, . . . .	100	100	100	100

It will be seen that the proportion of fathers with employment so irregular as to be termed "bad" was small—only about 2 to 5 per cent.; but there was a considerable additional proportion—about a fourth—whose employment could not be described as good. It is obvious that this is not an inconsiderable cause of a high infant mortality, especially as irregular employment is sometimes the result of intemperance, which still further impoverishes the household.

*Employment of Mother.*—In 522 deaths of infants under one year investigated, the mother in 38 cases, or 7 per cent., was employed otherwise than in home duties. In 12 cases, the mother was employed in factory work, in 9 cases as a fish-worker, and in 9 cases as a domestic servant. The remainder consisted chiefly of shop assistants. In about three-fourths of the cases, where the mother was in employment, she was unmarried.

Among the 38 deaths of the infants of mothers thus employed, death was due to prematurity in 10 cases—a proportion which is above, but not greatly above—that for all other infants.



There is, therefore, no reason to believe that in Aberdeen the infant mortality is much increased by the mother being employed in other than home duties.

Where the mother is so employed, the infant, as might be expected, is more often bottle-fed than breast-fed (about 3:2), but the confinement of some of these mothers in the Maternity Institution, where breast-feeding is the rule, tends to elevate the ratio of the breast-fed.

*Intemperance of Parents* could not be well inquired into, but in some cases it was well known or only too obvious. In greater or less degree, it was associated with probably about 10 per cent. of the families in which a death occurred.

*Cleanliness of House.*—Four grades were recognised, viz., “good,” “fair,” “indifferent,” and “bad.” It is satisfactory to be able to state that in only four cases was “bad” reported. In deaths among breast-fed children, the cleanliness was “good” in 71 per cent. of the houses and “fair” in 28 per cent., leaving only 1 per cent. under “fair.” In deaths among bottle-feds, the cleanliness was “good” in 70 per cent., and “fair” in 29 per cent., again leaving only 1 per cent. under “fair.” In one-half of the one-roomed houses associated with deaths under one year of age, the degree of cleanliness was marked as “fair.” In two-roomed houses, the proportion was one-third; in three-roomed houses, one-fourth; and in four-roomed houses, one-eighth, showing that the cleanliness of the house increased with the size. The proportions were about equal for breast-feds and bottle-feds.

The relation of deficient cleanliness to the cause of death is of interest. The proportion of houses of deficient cleanliness was highest among deaths from debility and pneumonia, and lowest among deaths from prematurity. For pneumonia, the per-centage was as high as 42 for breast-fed children and 36 for bottle-feds, while the corresponding figures for prematurity were 13 and 10. For debility, the per-centage was slightly higher than for pneumonia. There was also a high per-centage in connection with deaths from zymotics and convulsions; but the per-centage for deaths from bronchitis and tuberculous diseases was low, although not so low as for prematurity, being about 20 to 25 per cent.

Among deaths of children between one and two years of age, the per-centage of houses deficient in cleanliness was high for pneumonia and convulsions. The association of pneumonia with lack of cleanliness is noteworthy. Defective cleanliness is, of course, a complex factor, and may signify other conditions inimical to health.

*Dampness of House.*—Not many of the houses showed signs of dampness, but the proportion was undoubtedly higher than in the town generally—being 3 per cent. in deaths of breast-feds and 7 per cent. in deaths of bottle-feds. The dampness was confined to the smaller houses, but it could not be said to be specially associated with one disease more than another. If any disease seemed to indicate such association, it was tuberculosis.

*Lighting of House.*—In the case of only one house was the lighting found to be “bad,” and, in 90 per cent. it was marked as “good.” It cannot, therefore, be said that defective lighting materially influenced the infantile mortality. The disease most associated with deficiency of lighting was pneumonia.

*Ventilation of House.*—In no case was the ventilation marked as “bad,” but it was found to be defective in one-fifth of the one-roomed houses; one-twelfth of the two-roomed houses; and one-fifteenth of three and four-roomed houses. Defective ventilation was chiefly associated

with deaths from pneumonia, bronchitis, debility, zymotics, and convulsions. The defective ventilation was almost entirely due to habitual neglect in opening windows.

*Illegitimacy.*—The effect of illegitimacy on infant mortality was also studied, but it is not so great as might have been expected.

Of the 4,502 births during the year, 442 were illegitimate, and the mortality rate, as contrasted with that for legitimately born infants was as follows:—

	Births.	Deaths among Infants under 1 year.	Mortality per 1000 Births.
Illegitimate, . . . .	442	64	145
Legitimate, . . . .	4060	497	122

The difference is not great when regard is had to the unfavourable circumstances under which illegitimate children are usually born. The smallness of the difference is probably due in some measure to the good effects of the Maternity Institution, in which a fair number of unmarried mothers find a refuge and the best possible care for themselves and their infants. During 1907, 86 unmarried women, besides 65 married women, gave birth to children within the Maternity Hospital, and 12 other unmarried women, together with 65 married women, were attended as out-patients.

Of the 442 illegitimate children born in the city during the year, 335, or about three-fourths, were bottle-fed, and 107, or under one-fourth, breast-fed; while among the legitimate children the proportions were almost exactly the reverse, and approximated to three-fourths breast-fed and one-fourth bottle-fed. This would of itself sufficiently account for the difference in mortality-rate between illegitimates and legitimates. Breast-feeding is often impossible with unmarried women. The figures show that illegitimate infants in Aberdeen are, in general, nearly as well cared for as legitimate infants of the same class; and this is also the impression made on the Health Visitors in their visits.

The causes of death among illegitimate infants differed considerably in their proportions from those met with in legitimates, as will be seen below:—

Cause of Death.	LEGITIMATES. Total Births.		ILLEGITIMATES. Total Births.	
	4060		442	
	No. of Deaths.	Deaths per 1000 Births.	No. of Deaths.	Deaths per 1000 Births.
All Causes, . . . .	497	122	64	145
Prematurity, . . . .	95	23	20	45
Congenital Defects and Wast- ing and Debility, . .	72	18	21	48
Diseases of Digestive System,	65	16	5	11
Bronchitis, . . . .	44	11	6	14
Pneumonia, . . . .	56	14	2	5
Zymotics, . . . .	61	15	2	5
Tuberculosis, . . . .	16	4	2	5
Convulsions, . . . .	33	8	3	7

Among illegitimates, as compared with legitimates, the high mortality from prematurity and debility and wasting contrasts with the low mortality from zymotics and pneumonia. The extremely small number of zymotic deaths is probably due to many of the illegitimates being brought up in houses in which there are no other children of an age when they are liable to be infected with the commoner zymotics at school and play, and thus to introduce the disease into the household. Pneumonia is now believed to be also frequently of a zymotic character, and it is interesting to note how that, differing from bronchitis, it follows the zymotic rate in its smallness. But the numbers are too small statistically to warrant very definite conclusions.

The low mortality from digestive diseases among illegitimates is unexpected, in view of the high ratio of bottle-feeding with such children, but probably some of the large excess of mortality from wasting and debility had its origin in digestive ailments.

*Still-Births.*—The number of still-births is, of course, not obtainable from the birth registers, as, unfortunately, no provision has yet been made by law for their registration. As it is of some interest to know what the proportion of such births is at the present time in Aberdeen, I have obtained from the Maternity Institution the number of live and of still births within the Institution during the five years ending 1907. The total live births was 654, and the total still births was 65, so that there was almost exactly one still birth to every ten live births. The proportion, however, varied considerably in the different years, being as high as 1:6 in 1903 and as low as 1:20 in 1906.

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ABERDEEN, 14th November, 1908.







